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THE ORIGINS OF THE SOVIET INDUSTRIAL PRICE SYSTEM

I. *Introduction*

THE current debate by Soviet economists of the principles of price-formation in the USSR, as well as its own intrinsic interest, may perhaps justify this excursion into the organizational history of price-formation in Soviet industry. As far as I know the subject has not been treated in detail in English, while Soviet accounts are not common.

The *doyen* of Soviet writers on prices, Professor Sh. Ya. Turetski, recently followed up his pathbreaking *Sebestoimost i voprosy tsenoobrazovaniya* (published 1940: henceforth abbreviated as 'SVT') with his *Ocherki planovovo tsenoobrazovaniya*, and has edited *Sebestoimost i tseny* (both 1959). But, until recently, not many Soviet economists appeared to share his interest, while as recently as 1959 the faculty which Professor Turetski headed did not possess completed studies of price-formation in, for instance, chemicals or engineering.[1] Soviet sources have been even more reticent as regards the *levels* of prices, and the neglect of both aspects of the subject is, no doubt, partly due to its political delicacy. In particular, there was the issue which emerged in the 1920s of how fast industrialization should proceed at the expense of the peasantry.

In this essay, I shall not entirely lose sight of changes in price-levels, but I shall concentrate on the organizational basis of price-formation.

The cornerstone of this is the State monopoly of foreign trade, which is ultimately responsible for the insulation of Soviet internal prices from prices outside the USSR. By this single stroke the formation of prices was, right at the start of the Soviet era, removed from the exclusive domain of supply-and-demand and became—at least potentially—an organizational process. 'The question of prices', announced a plenum of the Central Committee of the Party in February 1927, 'is the crossroads of all fundamental economic, and consequently political, questions of the Soviet State.'[2] Professor Turetski wrote more recently that 'Price is a most important, sharp and effective lever of the Soviet State.'[3] It scarcely needs to be illustrated that there did take

place this implied transition from a passive relationship to an active instrument. However, the evolution was not straight-forward.

II. *Price-Fixing under NEP: 1921–1927*

As almost everyone knows, the earliest stages of this evolution were marked by inflation and by violent changes in the relationship of the industrial and agricultural price-levels. These culminated in the 'scissors crisis' of 1923, when relative industrial prices rose to record heights, owing to the much more rapid recovery of agricultural than of industrial production, to organizational factors, and to government (allegedly Trotskyist) policy. Active initiative in raising prices belonged mainly to the syndicates[4] and, in particular, to the trusts which in accordance with a decree of 10 April 1923 were permitted to concert their sales prices in agreement with purchasers,[5] and were also less well acquainted than the syndicates with the state of the market. The lack of foreign competition generated the illusion that home industrial prices could be raised indefinitely, an illusion which was fostered by the increased readiness at this time of the banks of industry and trade to finance commodity stocks. The necessity of reinforcing price controls by controls over stocks thereupon became apparent, and when the government embarked on a deliberate policy of reducing industrial prices, credit restrictions and (subsequently) the policy of making government assistance dependent on prior reductions in prices proved to be effective measures.[6]

Administrative pressure was also applied, and was perhaps even more effective. The Commission for Internal Trade (KVT), which a year before had been granted the right to regulate the transfer prices[7] of goods despatched by State undertakings, and particularly the Supreme Economic Council (VSNKh), which was responsible for various ordinances on the subject, began to exercise in earnest the powers which they already possessed. Government intervention comprised: invalidation by judges and arbitration courts of contraventions of established prices; intervention by superior authorities; and indictment of the individuals responsible.[8]

Considerable progress had been made by March 1924, when the currency was reformed; which at last made it possible to calculate costs exactly, as had been impracticable before 1923 and then barely so (if the relatively stable *chervonets* were used). After March 1924 it was no longer possible to compile a variety of different estimates, according to whom one wished to impress. The stabilization of the currency, by abolishing the need to insure against falling money values, also facilitated a transition from budgetary to bank financing of industry which had begun in 1922–23, and so assisted the credit system

to gain an influence over price-formation. At the same time the syndicates' influence over price-formation was weakened.[9]

In the later stages price reductions were, even less than before, due to the initiatives of the syndicates themselves. The scope for further reductions was naturally smaller. Cost reductions in most cases lagged behind reductions in transfer prices, with the result that profits were slashed or occasionally were converted into losses. This was partly unrehearsed, e.g. as an effect of rising raw material costs. Wholesale prices declined proportionately to industrial transfer prices, but retail prices to a smaller extent. Thus the results were uneven, and justified a conclusion that price-fixing would become more effective only if it also became more extensive.

Moreover in 1924-25, when demand was brisk, retail prices diverged sharply from wholesale, so that, according to Rozenfeld, the influence of the latter on the former became less and less perceptible. It was also the State trading network which earned the smallest retail margins. As any undertaking which raised its prices would make big profits, the divergence between wholesale prices and retail prices and between the comparative sizes of retail margins placed a great strain on the system of price-regulation. The re-engagement of obsolete equipment with its high running costs made things worse. Thus, when in 1926 there was a slight increase in industrial prices, 'each negligible rise in industrial transfer prices brought about a substantial rise in retail prices'.[10] It appears that irrespective of the direction of price movements the ratio of retail to industrial prices tended to increase, a result which can only be explained by the fact that price controls bore more effectively on wholesale than on retail prices.

The regulation of trade and of syndicates' activities was divided between VSNKh and the People's Commissariat of Internal Trade (NKVT),[11] which led Kantorovich to complain of an 'abnormal parallelism' which resulted in harmful dual subordination.[12] Indeed, up to 1927, 'trading margins, and hence also retail prices, were fixed in a fundamentally decentralized way, extensive rights (often misapplied) belonging in this respect to trading organizations themselves'.[13]

Tentative attempts to move forward were made. VSNKh, which had much to do with extending control over retail prices, began to regulate through the medium and with the help of industry. Local 'parity commissions' fixed trading margins as one of their most important tasks. The NKVT began to exercise its right of regulating the movement of industrial goods into particular areas. Sometimes the undertakings to be supplied were specified, but this in practice clashed with the systems of distribution of the syndicates and larger trusts,

which preferred their own networks to be dominant. A decree of 14 May 1924 introduced a system of 'order-tasks' which would specify quantity, quality, price and delivery-date. Materials and fuel were to be supplied to an undertaking at a price reckoned by the trust, whereas finished goods would be accepted according to the cost of production of the undertaking. Such a separation of functions can hardly have been satisfactory, but VSNKh had opposed the fixing of prices by contract as they alleged that this tended to dissipate a trust's working capital and to undermine planning.[14]

We see emerging one of the main difficulties in comprehensive price-regulation, namely the extreme complexity of the task facing a central authority. In existing circumstances, one line of least resistance was to allow the syndicates to regain influence over price-formation. This was for at least three reasons.

First, whereas during the first two years of NEP the building up of trusts was 'chaotic', between 1923 and 1925 a degree of specialization was introduced. Consequently, trusts became even more dependent on syndicates which alone could offer for sale the wider assortment which the market required.[15]

Second, the gradual squeezing out of private traders, of whom some trusts had been accused of making excessive use, confronted trusts which wished to pursue an independent trading policy with increasing difficulties, as it reduced the number of sales outlets.[16]

Third, the recommissioning of idle equipment, which brought into greater prominence the smaller factories to which this equipment chiefly belonged, obliged the government to rely more on regulation by syndicates of republican and local industry, which included many of these factories.[17]

The syndicates extended their planning and operative work by developing contractual relations, and by taking over additional duties which the government entrusted to them.

Thus, from 1925 onwards 'general contracts' between syndicates and consumers' cooperatives, which specified assortments and firmly fixed prices, became prominent. As they envisaged the size of trading margins, they strongly influenced retail prices. This was one aspect of a process of concentration in both supply and demand into fewer and larger groups. The same process now began to erase the voluntary character of the relationship between trusts and syndicates. Whereas decrees of 29 June 1927 and 29 February 1928 had merely required that VSNKh should allow trusts to join together in syndicates, in practice both the Council of Labour and Defence (STO), VSNKh, and the People's Commissariat of Trade, were obliging trusts in certain branches to deliver up all their output to the appropriate

syndicates. For example, this applied to the textile industry by a decree of 26 August 1927. The subsequent formation of supply and sales organizations inside 'associations', which were formed 'on the basis' of the syndicates, signified final abandonment of the voluntary principle in relations between trusts and syndicates.[18]

During this latter period of their existence, therefore, the syndicates together with STO and the NKT took an active part in confirming plans of purchase and sale, and so in confirming prices.

During NEP, whatever body formally or actually established prices, prewar value relationships still largely held the stage. Crises of 'goods shortage' or 'overproduction' had accompanied deviations from the prewar ratios of industrial to agricultural prices. Where no more exact method was available, prices were fixed on the basis of 1913 schedules, or 'by eye' when these were incomplete. Particularly after the monetary reform price relationships in some branches of industry (ferrous metallurgy, metal goods, silicates, textiles) were often founded, though with corrections, on prewar schedules. World market prices influenced in particular the non-ferrous metals and rubber industries, and also cotton, wool and leather, but in industry as a whole were not very important. However, the five-year plan envisaged 'the necessity of a gradual approach of industrial prices towards their level in the leading countries of contemporary capitalism'.[19]

III. *The Reconstruction of the Price System: Price Discrimination*

The Plan was conceived as involving both an expansion of industrial output and a radical change in its composition. The launching of the Plan was accordingly preceded, and accompanied, by the fixing of new price relationships. Advantage was taken of certain price reductions, particularly in 1927, to survey profit margins and the tax incidence on different assortments. The syndicates took a leading part in this work, which was not completed before 1929-30.[20] The new price levels worked out during the five-year plan were designed to stimulate or at least to be consistent with the required shifts in output structure. Their function was to point the way to new equilibria of supply and demand. New ratios were to be fixed between industrial transfer prices and retail prices; the prices paid for individual shipments were to be based on current production costs at the works concerned; and supervision was to be improved.

Differentiated purchase prices were worked out so that works which *produced* at different cost levels could nevertheless *sell* at a uniform price, which would simplify planning outside the bounds of a given sales group and would give support to planned supply programmes by

minimizing any tendency to deviate from them. Therefore, from 1928 a system of dual levels was introduced. A standard price was payable to the trading organization (a syndicate), which remunerated producing units in accordance with *their* cost levels. Essentially, this was a fresh shot at a solution of the problem which the system of 'order-tasks' adopted in 1924 had also been intended to tackle, but we notice that two centres of price-formation had now become one. Thus, the control figures for 1929-30 presupposed two prices chargeable by the salt syndicate, one for settlement with the trusts and the other with the market.[21] Towards 1929-30 dual price levels might be found in the metallurgical, textiles, silicates, timber and woodworking industries and some others. The syndicates were the cornerstones of this complex arrangement, and their importance must consequently have been further enhanced. In the textile industry commercial and administrative functions had already been successfully combined, and the role of the syndicates in price-formation was very likely one reason why, as already noted, they were now transformed into State organizations (by a decree of 5 December 1929).

The aim of simplifying planning in value terms outside a given group also prompted removing discrimination as between customers for certain capital goods, e.g. a unified price was fixed for metal, which previously had been supplied to transport at cut rates.[22] On the other hand, to the same period belongs the introduction of differentiated prices for retail consumers: low prices for rationed goods and much higher 'commercial' prices for above-ration supplies; as well as the introduction of rationing itself. Thus, the burden of accommodating itself to differentiation was not all to be borne by industry: part was to be borne by the consumer.

The decree of 5 December 1929 focussed attention on the undertaking as the nucleus of technical direction and accounting. In the clamour of industrialization factories had to toil at full capacity, bringing out hidden reserves. Pushed beyond a certain point, emphasis on maximizing production must squeeze out any thought of economy so far as the basic units of production are concerned. But if economic accountability is simultaneously emphasized, this necessitates making compensating changes in the system of pricing. The effective unit of differentiation was now specified more precisely. Following the credit reform promulgated on 30 January 1930, the 'factory-works cost' became the basis for the accounting price so that the factory became this unit. A works planning section was to include a 'Bureau of Preliminary Calculation and Prices'.[23]

Clause II of the decree of 5 December 1929 expressed a hope that VSNKh and the People's Commissariat of Trade would issue only

general instructions concerning reductions in transfer prices, so that prices should actually be fixed as far as possible by the associations. However, it is clear that price-fixing would in a very large degree be centralized.

(a) In the first place, if VSNKh and the People's Commissariat of Trade disagreed (as in practice they often did) the question would be referred for decision to STO.[24]

(b) Part I of an ordinance issued by VSNKh on 23 September 1930 (*prikaz* no. 2008) laid it down that wholesale-transfer and accounting prices applying to goods turned out by type A associations (which included only 'all-Union' undertakings), and by types B and C associations (which consisted partly or wholly of republican and local units), if these prices applied throughout the association, should be worked out by the all-Union associations and confirmed by the price bureau of VSNKh SSSR. (The latter had been retained, as an independent body, when the central apparatus of VSNKh was reorganized towards the beginning of 1930, concurrently with the formation of associations.) The prices thus formed were then extended to like products of other groupings of State and cooperative industry.

(c) The output of republican units was to be sold by the corresponding all-Union association belonging to the same branch. VSNKh might authorize a republican association to dispose of its own output, but in that case its price, *inter alia*, continued to be laid down by the all-Union association.[25]

(d) When differentiated prices were paid to undertakings belonging to associations of types B and C, the general limits within which prices might vary were to be worked out by the all-Union associations and were to be confirmed by the price bureau of VSNKh SSSR.

(e) Republican associations were empowered to confirm the prices paid to handicraft industry subordinate to VSNKh, in agreement with the main consumers. A republican bureau was also empowered, in agreement with the all-Union bureau, to establish lists of articles of which it might itself fix the prices.

(f) The price-lists proposed by associations were to be agreed with the main consumers and were not to be brought into force until they had been confirmed by the price bureaux of republican VSNKh or the bureau of the all-Union VSNKh. Such prices could be *raised* only by special decision of the presidium of the all-Union VSNKh.

(g) Part II of the same ordinance of 23 September 1930 laid it down that, in effect, trading margins were to be established only by organizations which planned the amounts of their own turnovers (i.e. VSNKh, and the people's commissariats of Trade, Land, and Posts and Telegraphs). Any system of trading margins confirmed by other

departments needed to have been previously examined by the price bureaux of republican VSNKh or the bureau of the all-Union VSNKh.[26]

IV. *The Reconstruction of the Price System: Turnover Tax*

The decree of 5 December 1929 observed that the formation of a single unit of economic accounting required simplification of the system of industrial taxation. As industrialization got into top gear, it became essential that a larger contribution to budget revenues should be made by the urban population. Both questions were now solved in a manner which also permitted a simultaneous solution of the question of the relationship between the industrial transfer and retail prices. On 2 September 1930 it was announced that all taxes, except deductions from profits, which had previously been payable by industrial or sales organizations, would be replaced by a single turnover tax which would be payable directly by the sales organization. The rate of tax was expressed as a percentage of the transfer price, in which the turnover tax was included, thus in general raising the ratio of transfer price to retail price[27]—and thus, presumably, raising the retail price itself. The new tax cast in permanent form the gap between industrial transfer and retail prices, showing it to be a concomitant of a production policy which is not governed by a free market.

The turnover tax has clearly been very successful from the fiscal point of view, as it has ever since been the mainstay of the Soviet budget revenue, though it now accounts for less than half of total revenues whereas in the mid-1930s the proportion was at least three-quarters. The tax was levied also on means of production, to an unpublished but evidently quite minor extent.[28] The importance of turnover tax on one hand as an element in budget revenues, and on the other hand as an element in consumer expenditures, makes it into a kind of ligament binding together the budget revenues and the retail trade turnover.

As regards the impact of the reform on industrial prices, Turetski concluded that on balance it resulted in improved control over prices differentiated according to consumer group, as well as over the fulfilment in scale and assortment of production plans.[29]

It will perhaps be helpful to the reader, and is also convenient as this can form a background against which to view subsequent developments, to attempt a snapshot of the system of price-formation following these reforms, though this can be done only summarily and schematically:—Accounting prices were fixed by associations, trusts and undertakings in conjuction, on the basis of heads of expenditure derived from the planned tasks assigned to undertakings. These tasks

were established with the participation of all three levels of administration in accordance with general instructions emanating from the central authorities; normally the annual production and financial plan would be worked out by the director of the undertaking on the basis of general instructions from higher levels, which after confirmation remitted it to the undertaking to implement. Transfer prices, which were erected upon the average level of accounting prices charged inside the given group, included also certain charges in respect of functions performed by the group organization (an association or trust). The size of the margin which reflected this difference in functions between inferior and superior levels of administration was not under the control of the undertaking, but the latter had a voice in the matter, and Venediktov mentioned disputes between undertakings and trusts or associations lasting several quarters, over which period none of the parties knew what sum they would eventually receive.[30] The transfer price also, in general, included turnover tax. At first the Council of People's Commissars decreed rates of tax applying to whole associations, presumably after having consulted NKF, VSNKh or NKSnab, which themselves established rates in respect of some subsidiary divisions. (For instance, NKF was entrusted with fixing in agreement with VSNKh, and on the basis of the former rate of 34.2%, individual rates for the four divisions of the former all-Union textile association, and in agreement with NKSnab, with fixing new rates of tax on spirits, tea, pastry, etc.)[31] The rates at which individual undertakings were assessed were worked out by the associations themselves.[32] The maximum rate of turnover tax was bounded by the difference between the transfer price (now raised, in order to accommodate it) and the commercial cost (i.e. the accounting price plus subsidiary, mainly selling, expenses), but the tax did not normally occupy the whole of this difference. There were, in addition, deductions from profits, which presumably were a somewhat more variable quantity, as the amounts of turnover tax actually deducted were somewhat rigid. (See below.) Furthermore, the whole structure was erected on the average level of accounting prices within the given group, which might vary according to its composition. Thus, the way in which prices were formed was inextricably bound up with the organizational structure of industry.

This, in fact, is an account of the anatomy of price-fixing, but not of its physiology, how it actually functioned. About this, very little has been published. However S. G. Strumilin, who was discussing how overhead costs should be allocated in a case of joint supply in the chemicals industry, wrote as follows: 'A compound of these products is calculated, and output is valued proportionately to co-

efficients which have been established by the Chief Administration of the Chemical Industry in agreement with the sub-section for accounts of VSNKh SSSR'. As these coefficients had been formed in connection with 'fluctuations in sales prices', the Chief Administration was forced to resort to the market for guidance (i.e. to base itself on what was being paid in similar transactions). Owing to the fact that, as Strumilin claims, to an increasing extent market prices were formed by the People's Commissariat of Trade, which itself turned to the Chief Administration of the Chemical Industry for assistance in fixing prices in this industry, this resulted in the formation of a closed circle.[33] To judge by this illuminating comment, the leading price-fixing authorities were tending to rely on each other, an arrangement which was compatible with price fluctuations.

If this is a correct understanding of the position, it is a slightly surprising result, considering the apparent rigidity of the system. However, variability had been intended to be the essential virtue of the turnover tax. There were to be as many individual rates of turnover tax as of transfer price. At any given rate of tax the actual sum paid was to vary according to the volume of turnover in the previous period. Flexibility in this latter sense was not in fact achieved, at least in the early stages, when, according to Azarkh, 'in reality, all assessments amounted to exacting mechanically 100% of the previous exaction'.[34] On the other hand, as regards differentiation of *rates* of tax the authorities appear to have coped with their tasks only too well, to judge by a later complaint by Turetski of 'divisibility and multiplicity in rates of turnover tax, which was destructively established in individual branches of the economy by enemies of the people'.[35] Certainly, retail prices rose steeply between 1928 and 1936,[36] which should have permitted all the greater measure of stability to prices of capital goods, just as during the 1941-45 war the exiguity of supplies impinged on the private sector of the retail market, where the rise in prices reduced the pressure of demand for rationed goods the prices of which could be kept stable.

One other change of importance was made in 1930. This was the introduction of a system of railway freight charges which tapered to as little as 25-30% per ton/km. of the initial rate. The object was to facilitate the re-location of industry, and undoubtedly it did facilitate the industrialization of remote parts, while minimizing its calculable disadvantages.

Neglecting costs of local transport from the railhead to the consuming factory, the freight charge could be expressed by the difference between costs reckoned to the rail station of departure and costs reckoned to the rail station of destination. Prices reckoned as far as the

rail station of destination (*franko stantsiya naznacheniya*) offered sellers a stronger incentive to economize on transport than did the alternative system. Such prices began to be introduced from 1924-25 onwards, but between 1926 and 1930 they had only a limited importance, and in some areas it was proving difficult to extend pricing according to this system.[37] Clearly, such an extension would have cut across the prevailing trend of paying rather less attention to transport costs.

V. *The Pricing System under Strain*

In the difficult conditions of 1931-33 the movement of industrial prices was by no means fully under the control of the government. This was the epoch of forced industrialization: of a rapid expansion in the labour force, exceeding the percentage growth of industrial output:[38] when in the course of two years (1931-32) the average wage of workers in industry rose by 42%;[39] of collectivization and agricultural disasters; when the foundations of the socialist economy were laid. Naturally, all these changes left their mark on price-formation.

As we saw in section II, during the late 1920s price-regulation had to contend with the fact that it was advantageous to socialized undertakings to raise their prices. In the early 1930s this was even more the case. According to Turetski, 'individual branches of business and individual undertakings often tried to cover up their failure to fulfil production tasks, and the associated increase in production costs, by illegally raising prices'. He referred to 'infringement of plan-established prices by wreckers in particular branches of industry in certain periods, especially in 1931-33'. Though this mention of 'wreckers', in the familiar terminology of 1937-38, is the reverse of convincing, the unauthorized raising of prices would seem to have been fairly widespread, for Turetski more than once described it as 'illegal, unplanned and anti-state', as 'arbitrary and anarchical', etc., and he alleged that the effects upon costs of *planned* increases in the prices of agricultural raw materials and of timber, coal and peat were by comparison negligible.[40] There was much other evidence of concern over the problem. V. M. Molotov, who in 1931 was appointed chairman of a price committee (see below), wrote: 'Are there not, indeed, instances when managers of trusts, cooperative organizations, factories or State farms sell their produce "more advantageously", infringing the established prices and not fulfilling their obligations to the State, in effect rolling down the dirty road of speculation?'[41]

When this happened, the commonest circumstance was that some loophole had been left in the regulations. For example, although articles produced by VOVAT[42] were priced by the Molotov Committee,[43] 'VOVAT, making use of the fact that the prices of spare

parts were not regulated, raised them considerably as compared with the previous year', and refused to retract until the State Arbitration intervened. As regards spare parts ordered by a decentralized procedure, the list price might be exceeded by as much as 500%. Thus, component no. 107 should have been priced at 5r. 19k., but was sold for 8r. by Orgmetall, 9r. 13k. by the Spartak works, and 28½r. by the Ilich works. An opportunity to revise prices occurred at the beginning of each year, when contracts were concluded. For example, Atsetometil before signing contracts with the all-Union associations of fatty, perfume and bone industry, and of chemicals and plastics, proposed a sharp rise in prices for 1933, which was described by Amfiteatrov as a characteristic proposal.[44]

Certain increases also resulted from a relationship which is mainly of theoretical interest. The division and suppression of many associations in 1931-32 and their re-formation into more specialized trusts apparently aggravated the tax burden. The reason was that inside an association (strictly speaking, if its sales organization were concerned), the price paid in any transaction was the accounting price, whereas external customers paid the (normally higher) transfer price, which included turnover tax. Hence if an association was split up into smaller associations, or into trusts which managed their own sales, in a proportion of transactions the transfer price replaced the accounting price. This applied to raw materials, and other basic materials, supplied to Leningrad's engineering industry during the first five-year plan: their increased costs reflected, in part, such organizational changes.[45] But one cannot guess how important this phenomenon may have been, especially considering that when a *subsidy* was payable there was naturally an inverse relationship, i.e. the accounting price was higher than the transfer price.[46]

It was doubtless with the minimum aim of bringing the upward movement of prices under more effective control that it was decided to take fresh measures.

(a) First, whereas before 1932 there had been no single understanding of exactly what was included in the transfer price, towards the end of 1931, and in 1932, the elements included in costs and in the transfer, wholesale and retail prices were classified for the first time. This was an important step forward.

(b) Transport expenses, which made up about two-fifths of the costs of distribution, began to be included in the trading margin. As a result, 'the possibility of including unplanned expenditures in commodity turnover and of infringing established margins was reduced'.[47] The planning of retail prices in territorial cross-section was facilitated, and zonal prices began to be widely practised. At the same time the

system of single prices applying to the whole country (*etiketniye tseny*) was extended.

(c) A schedule of producer goods, the prices of which were to be fixed by the government, was first defined by STO decree of 26 February 1932: it included fuels, ferrous and non-ferrous metals, building materials, timber and the produce of the wood-working and paper industries, wood chemicals, mineral fertilizers, automobiles, railway locomotives and wagons, and ships. In respect of these, however, the government fixed only 'jumping-off' prices, which were to be elaborated and confirmed by the 'appropriate' people's commissariats.[48] A subsequent decree of 5 February 1933 assigned to regional authorities the fixing of prices of local building materials and lorry freight charges but reserved to people's commissariats, or in individual cases to STO or the KTF (see next paragraph) the right to fix the prices of *funded* building materials (those which were allocated on a national basis), and of standard equipment, such as spare parts, which were produced in quantity.[49]

(d) There were a number of institutional changes connected with price regulation and supervision, as follows:

The fixing of transfer, wholesale and retail prices was one of the tasks of a price committee which was set up by decree of the Council of People's Commissars of 11 October 1931. One of its chief tasks was to supervise price increases by trading organizations. As noted, V. M. Molotov was appointed chairman of this committee, which was attached to STO and operated through local plenipotentiaries. On 1 April 1932 it was renamed the Committee of Goods Funds and Regulation of Trade (KTF). Its functions were left unchanged, but a decree of 23 July of the same year laid down that the committee would fix the prices of goods produced by industrial cooperatives if these were made out of materials subject to allocation procedures, or might delegate this task to the appropriate people's commissariat.[50]

Already in 1931 this committee seems to have worked in close collaboration with the People's Commissariat of Supply. By decree of 22 May 1933, this Commissariat was entrusted with working out, on behalf of KTF, changes in retail prices and trade margins concerning the main industrial consumer goods and food products and with overseeing price-fixing in all commissariats and cooperatives.[51]

A decree of the Council of People's Commissars of 20 November 1931 set up a price inspectorate with supervisory functions, to be attached to the People's Commissariat of Workers' and Peasants' Inspection.[52]

In January 1932 VSNKh was split up into commissariats of the heavy, light and timber industries. Its apparatus was inherited by the People's Commissariat of Heavy Industry, which latter was equipped

with a price bureau which apparently was authorized to confirm prices. As is also implied by the functions entrusted to KTF, similar bureaux must have been attached to the other two commissariats, as well as to others which were set up subsequently.[53]

A State Arbitration Commission (Gosarbitrazh) was set up by decree of 3 May 1932, in succession to an earlier body.

All these bodies, beginning work at about the same time, must have powerfully complicated the task of any would-be transgressors, though no doubt they also trod on each other's toes and probably spent part of their time supervising each other's work. From the autumn of 1931 onwards resistance was being built up against unauthorized increases, as is shown, for example, by telegram no. 112450 despatched from the People's Commissariat of Supply on 25 September 1931,[54] or by a decision of STO in the spring of 1933 that it was impermissible to raise the prices of equipment above their existing level, and inviting the People's Commissariat of Heavy Industry to draw up detailed price-lists; this was subsequently modified by a further decision of STO to reserve to itself the right to fix the prices of mass-produced and series-produced goods.[55] The sequence suggests that even a very slight devolution of powers would have had serious consequences, and so could not be permitted. Elevich and Shakhnazarov complained of delays in price-fixing, which had the result of bringing windfall gains to one party or the other and did not contribute to rationalizing production processes or to improved costing.[56] It seems very likely that the creation of so many new controlling organizations, or the reinforcement of old ones, had slowed down the mechanism of price-formation, with the result that its main characteristic became its lack of flexibility.

VI. *Price Formation During the Second and Third Five-Year Plans*

Whatever issues can be distinguished in the development of price formation during the later 1930s are less clear cut than those which came up for decision during the first five-year plan. One of the first impulses which can be detected, and this is perhaps not surprising once the machinery of price-fixing had been consolidated, was a renewed impulse towards differentiation of prices in order to accommodate different levels of costs and cost-profit relationships. Such differentiation was one of the incentives now held out to 'local' industry, which had been temporarily in eclipse. In 1934 a resolution of the XVII Congress of the Party transferred to local industry a number of all-Union and republican undertakings, and local industry was also to receive back a substantial part of any profits which it earned. Councils of people's commissars of autonomous republics, and krai and oblast

executive committees, were permitted to raise their selling prices by up to 20% if materials were being obtained decentrally, or locally produced fuel was consumed.[57] At the other extreme the introduction of new techniques had the eventual result of reducing costs, so that in various branches, as compared with 1927-28, ratios of maximum to minimum costs had increased. No doubt this was often the reason why different prices were being charged for the same item, e.g. for certain metallurgical and engineering products.[58]

Another form of differentiation, i.e. territorial, was implicit in the setting up of eight price zones in 1935. True, the zonal prices sometimes differed by approximately the difference in transport charges, so that the effect of the tapering of railway freight charges (referred to in Section IV) was reinforced. However, in a sense this still amounted to discrimination in so far as the pattern of location was thereby reconciled with the territorial pattern of demand. Sometimes, however, the excess transport charges were relatively the larger (oil) or noticeably the smaller (e.g. sugar).[59]

In any case, price differentiation was made all the more necessary by the stipulation that undertakings should be fully accountable in an economic sense, and by the narrowing in their specialization (the merits of which were generally assumed by Soviet economists), which reduced the possibility of offsetting an unprofitable item by a profitable one. On the other hand, one circumstance acted in the opposite direction, namely the fact that subsidies were still being paid to many whole branches of industry. This situation was radically altered by the introduction as from 1 April 1936 of new transfer prices based on the average cost of a given branch, while differential retail prices were simultaneously suppressed.

The removal of subsidies was made possible for two reasons: the less inefficient management of industry, and the more wide-spread adoption of accounting prices. We are specially concerned here with the second reason. The intention at this time seems to have been to concentrate on the introduction of accounting prices for primary materials, such as coal, ore, coke, cement and lime. They were ideal subjects for discrimination, because their specifications were relatively uniform. This made it possible for subsidies to be discontinued in engineering, metallurgy and chemicals (during the second five-year plan), and in coal-mining, peat cutting and brickmaking (in 1938-39).[60] However, the very fact that it was necessary to introduce accounting prices in parallel with the removal of subsidies shows the limited nature of the reform.

There were, however, some situations which did not favour diffusion of the accounting price system. For example, centralized sale was

sometimes difficult to arrange, when the same article was being produced by more than one commissariat (this applied to timber and bricks, among other things, and was all the more common because the commissariats began to be ingrown into small semi-self-sufficient economies of their own). As commissariats became more numerous, this sort of situation must have become increasingly common. Moreover, under the accounting price system sales organizations were not interested in the fulfilment, or still more over-fulfilment, of the production plans of the more unprofitable members of the group, and this sometimes made it impracticable to introduce the system.[61] It was equally impracticable to introduce such a degree of differentiation in rates of turnover tax as might take care of every eventuality.[62]

Thus, there were limits beyond which price differentiation could not be advantageously pushed. But there might also be limits beyond which it was not really necessary, if only the costs of components could be made more uniform. Certain differences in prices were, in fact, justifiable neither by quality nor by cost. Such cases seem to have been commonest among consumer goods, such as food, confectionery and furniture, and consequently in 1938 single prices were introduced in regard to raw materials and semi-manufactures consumed by main branches of the food and textile industries.[63] The effect of such changes would sometimes be to make a special system of accounting prices unnecessary.

There was also scope for ironing out other unnecessary differences, and between 1938 and 1939 single 'wholesale-transfer' prices were established in light industry. Such prices included turnover tax, and so with the addition of a sales margin formed the retail price. This margin was, however, determined by the trading organization itself, so that the retail price was not fixed uniformly.[64] Apparently as a development from this arrangement, in 1939 a system of dual 'undertaking' wholesale and retail price-lists (the wholesale price excluding turnover tax) was introduced into the textile industry and was later extended to others. This is alleged to have made the financial situation of undertakings more stable. The problem had also been attacked from the other end; before the schedule of prices had been approved by the government, the number of items in production had been reduced.[65]

The scope of price-fixing by the government was also enlarged, in the course of a reform of wholesale prices undertaken between 1936 and 1940, which had as its main object to base wholesale prices on costs and a minimum profit rate. The nomenclature of products, the prices of which were to be fixed by the government, was extended, and the government advanced from fixing only 'jumping-off' prices to fixing more detailed price-lists.[66]

After a decade during which the question had been dormant, in 1939 and 1940 prices reckoned to the rail station of destination were brought in for two items which are very heavy in relation to their value, cement and scrap metal, while prices reckoned on the same basis were also applying to all main items of personal consumption, especially provisions.[67] Also in 1939 the system of tapering of railway freight charges which had been introduced in 1930 was modified, the ultimate rate being increased from 25%-30% of the initial rate to 45%. At about this time, sudden and loud complaints had been voiced about the evils of maldistribution of industry and of excessive or unnecessary haulage.[68]

Thus, this was not a period of stability as regards the organization of price-formation. Nor was it as regards the level of prices, and were information more abundant than it is it would doubtless be possible to trace a closer connection between these two aspects of the subject. The fixing of higher prices for some capital goods as from 1 April 1936, in connection with the abolition of subsidies, had already resulted in a notable shift in the make-up of costs in heavy industry, while judging by the degree of adequacy of amortization charges reckoned on their book valuation at the time of installation, prices of equipment had also been rising.[69] In 1939 the transfer prices of building materials and ferrous and non-ferrous metals, as well as building and transport charges, were raised,[70] and further increases in prices of certain materials, of equipment and electric power, and in freight charges and valuation of building work, apparently took place towards the beginning of 1941.[71] Of course, these fragmentary references would not allow one even to guess at what may have been the average increase in the prices of producer goods, but at least they would not be inconsistent with an increase in producer goods' prices of 50-100% between 1936 and 1940, such as is implied by Dr. Jasny.[72]

Contemporary sources also make occasional mention of irregularities in price-fixing, e.g. supply organizations tended to inflate warehouse charges, and a newspaper correspondent who had discovered abnormalities in the pricing of bitumen asked who had given the contracts office (*Konventsionni byuro*) of the people's commissariat of trade of the Checheno-Ingush Autonomous Republic the right to confirm the price of bitumen which had been produced by all-Union undertakings?[73] Turetski alleged that certain ways of classifying expenditures were being used to conceal spontaneous and unauthorized increases in prices, and he ascribed this 'criminal practice of illegally increasing prices' to the machinations of saboteurs, but in fact the motives probably were to make ends meet, or to conceal overspending on raw materials, fuel or wages.[74] On the whole, however, one does

not gather that such practices aroused very great concern and, no doubt, the rise in prices was mainly conditioned by causes external to the economic system, such as the need to spend more on defence. Besides, the reinforcement of the machinery of price-fixing by comparison with the early 1930s must surely have brought some positive results.

At last, in 1941, the names of organizations responsible for confirming transfer prices were published in one rather obscure source. They were as follows:—

(a) The highest governmental body to examine and confirm industrial transfer, or any other, prices was the Economic Council; this confirmed the prices of only the most important types of products, according to a special list determined by the government. This list included the outputs of the ferrous and non-ferrous metals industries, basic types of machines, all kinds of fuel, building materials, basic chemical products, and main food products and consumer goods.

(b) The prices of the remaining products of all-Union industry were confirmed by the people's commissariat which had produced them in agreement with the main consuming organization, i.e. with another commissariat as regards semi-manufactures, or with the People's Commissariat for Trade as regards consumer goods.

(c) The production of republic or 'local' industry was divided among two categories. Products which were identical with those turned out by all-Union works were to be priced similarly. The transfer prices of finished or semi-manufactured products of republic industry were to be fixed by the corresponding republic industrial people's commissariats in agreement with the republic commissariats of trade.

(d) The transfer prices of new products were to be presented for confirmation only after six months' experience in the production of these goods. Meanwhile, prices were fixed by agreement between the producing and the consuming bodies.

(e) In individual orders, whether for finished or semi-manufactured goods, transfer prices were to be fixed by agreement, which must be formalized in a contract, between the parties immediately concerned. If this applied to a finished article, the price of any component of it was to be 'in correspondence with' the price of the complete article.

(f) The transfer prices of the products of oblast or raion industry, of handicraft or invalids' cooperatives, or of communal organizations, were to be fixed by oblast executive committees, by councils of people's commissars of autonomous republics, or by city executive committees

(in Moscow and Leningrad), unless they had already been fixed by the government.

(g) Any transfer price might be lowered by whatever body had confirmed it, but irrespective of whatever body had confirmed this price, it might be raised only by decision of the central government.[75]

This leaves unknown an infinite quantity of detail as to the precise bodies involved, and also leaves uncertain what exactly were the procedures followed. As regards accounting prices, according to a personal statement, the job of an engineer/accountant at about this time would have included calculation of the costs of all components purchased from outside his factory, to which would be added the factory's own costs of assembly and an appropriate allowance for overheads. If this resulted in a factory price higher than that fixed in advance by the government, the next step would be to try to secure a reduction in the prices of the components purchased from outside. The accountant would also look at the costs of assembly, and if the factory's price still exceeded the government's price, the factory could apply for the latter to be reconsidered. Such an application would, however, only be granted if the factory's own operations had been submitted for inspection and had not been found wanting. Such procedures were probably widespread, and were invaluable in lubricating the system.

The distinction between the accounting price paid to a factory and its planned costs is explained from a somewhat different angle in an article by E. Mitelman. Although the accounting price should equal the planned cost, there were in practice three main reasons why it often did not. These were that:—(a) The accounting price was usually fixed for a calendar year, whereas the planned cost was laid down quarterly in step with the plan of cost reduction: thus in the first half of the year the accounting price would tend to fall short of the planned cost, but in the second half to exceed it; (b) Often the accounting price excluded certain elements in planned cost, e.g. amortization designated for financing capital construction; (c) On the other hand, often a portion of profits was designated to supplement working capital and this portion would be *included* in the accounting price.[76] Although published in 1945, this analysis can probably be taken to apply to the prewar period.

VII. *Final Comments*

Reviewing the period covered by this essay, we notice that although the establishment of the State monopoly of foreign trade was the cornerstone of the system of price regulation, it was far from being an adequate basis. In turn administrative pressure, controls over

stocks, the currency reform, industrialization and expansion in the State sector of the economy, and finally taxation policy, had to come to the aid of the price-regulating mechanisms. A wide and permanent gap between wholesale and retail prices became a basic feature of the price system.

Comparing 1931 with 1941, we find that the changes introduced between these dates are relatively minor. The elements included in costs and in the different categories of prices were classified, and the list of items to which the most highly centralized procedure applied was specified; this, as we saw, was first done in 1932. There was now a provision for establishing temporary prices, by agreement between producing and consuming bodies, in respect of new types of products; this was an important exception to the usual procedure which has incidentally brought in its train certain difficulties in the estimation of Soviet industrial growth. The prices charged in individual orders might also be agreed by the parties immediately concerned. There were also certain institutional changes. In general the functions of the associations in price-formation were inherited by the commissariats which during the 1930s became increasingly numerous. On the liquidation of VSNKh its special functions of concerting general instructions with the People's Commissariat of Trade naturally lapsed. As the Council of Labour and Defence no longer existed, the highest ranking body to examine and confirm prices became the Economic Council.

In general, the price regulating system has been used to try to keep prices down, and the very fact that this is a continuing preoccupation shows that some degree of success has been achieved, but it demonstrates that the pressure to raise prices is also continuous. Unauthorized increases have tended to occur especially at times when this pressure is strongest, and when increases are also occurring in authorized prices. As in other spheres of industrial organization, the government's reaction to such pressure has been to strengthen the regulating machinery.

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[1] *Sebestoimost i tseny* p. 3.
[2] *KPSS v rezolyutsiyakh* part II (1954) p. 345.
[3] *Vnutripromyshlennoye nakopleniye v SSSR* (1948) pp. 323-324.
[4] These were commercial organizations which the trusts (themselves set up at the beginning of NEP) had banded together to form, in the initial stages voluntarily.
[5] Ya. S. Rozenfeld, *Promyshlennaya politika SSSR* (1926) p. 252.
[6] Cf. Rozenfeld *op. cit.* pp. 435-436; G. V. Lakin, *Reforma upravleniya promyshlennostyu v* 1929-30 p. 26; and E. Kviring, *Ocherki razvitiya promyshlennosti SSSR* 1917-1927 p. 85.

[7] *Otpuskniye tseny:* broadly speaking, the prices paid when goods passed from industry into the trading network.

[8] A. V. Venediktov, *Gosudarstvennaya sotsialisticheskaya sobstvennost* (1948) pp. 466-467.

[9] V. Kantorovich, *Sovetskiye sindikaty* (1925) pp. 87, 90; *SVT* p. 179.

[10] *SVT* p. 183, and Ya. S. Rozenfeld *op. cit.* p. 404.

[11] Successor to KVT. On November 18, 1925, this was merged with the People's Commissariat of Foreign Trade to form the People's Commissariat of Trade (NKT).

[12] V. Kantorovich *op. cit.* p. 126.

[13] *SVT* p. 179.

[14] A. V. Venediktov *op. cit.* pp. 467-468, 739-741.

[15] A. Lokshin, *Organizatsiya upravleniya promyshlennostyu SSSR* (1935) p. 6, and G. Sakharov, N. Chernoy and G. Kabakov, *Ocherki organizatsiya tyazheloi promyshlennosti SSSR* (1934) p. 36.

[16] A. V. Venediktov *op. cit.* pp. 391-392.

[17] A. Lokshin *op. cit.* p. 28.

[18] Yu. I. Moshinski, *Ekonomika i organizatsiya obrashcheniya sredstv proizvodstva v SSSR* (1936) pp. 113-114, and A. V. Venediktov *op. cit.* p. 470.

[19] A. G. Sipachev in *Metall* nos. 9-10, 1931 p. 163; *SVT* p. 57; and *Pyatiletni plan* (1929) vol. I p. 105.

[20] *SVT* p. 193.

[21] *Torgovo-promyshlennaya gazeta* 13 September 1928 p. 3.

[22] *SVT* pp. 192, 199, and cf. A. Lokshin *op. cit.* p. 28.

[23] I. Dudko in *Ekonomicheskaya gazeta* 22 October 1931 p. 3.

[24] A. Lokshin *op. cit.* p. 44.

[25] A. Lokshin *op. cit.* pp. 141-2, 153.

[26] Khr. Bakhchisaraitsev, S. Drabkin and S. Zaitsev, *Gosudarstvennoye predpriyatiye* 2nd edn. (1932) p. 549.

[27] *SVT* p. 192.

[28] Cf. S. N. Prokopovicz, *Histoire Economique de l'U.R.S.S.* (1952) p. 465.

[29] *SVT* pp. 206, 24.

[30] A. Lokshin *op. cit.* pp. 43-44; E. Mitelman in *Sovetskiye finansy* 1945 nos. 3-4 p. 7; A. V. Venediktov, ed., *Organizatsionniye voprosy khozrascheta v promyshlennosti* (1933) p. 62.

[31] *Sobraniye zakonov i rasporyazhenii SSSR* 1931 no. 14, 136, 27 February 1931; no. 20, 176, 21 March 1931; and no. 30, 231, 3 May 1931. Together with the People's Commissariat of Foreign Trade the People's Commissariat of Supply (NKSnab) was created on 22 November 1930, out of the former People's Commissariat of Trade. See above, footnote 11.

[32] M. P. Azarkh in *Ekonomicheskaya gazeta* 27 October 1931 p. 3.

[33] S. G. Strumilin, *Problemy planirovaniya v SSSR* (1932) pp. 420-1.

[34] M. P. Azarkh in *Ekonomicheskaya gazeta* 27 October 1931 p. 3.

[35] *SVT* p. 24.

[36] Cf. S. Gachkel, *Le Mécanisme des Finances soviétiques* (1946) p. 114.

[37] *SVT* pp. 124, 192.

[38] In 1931 and 1932, respectively, industrial production grew by 23.3% and 13.7%, the number of workers by 28.6% and 18.3% (*SVT* p. 74).

[39] Sh. Ya. Turetski in *Vestnik statistiki* 1960 no. 12 p. 41.

[40] *SVT* pp. 25, 78-79, and Sh. Ya. Turetski in *Planovoye khozyaistvo* 1935 no. 9 p. 97.

[41] V. M. Molotov, *V borde za sotsializm* (1935) p.380.

[42] VOVAT produced railway locomotives and wagons.

[43] *Kommunisticheskaya akademiya, institut Sovetskovo stroitelstva i prava: sistema planovykh dogovorov v promyshlennosti* (1933) p. 39.

[44] G. Amfiteatrov in L. Gintsburg and I. Suvorov, *Voprosy Sovetskovo khozyaistvennovo prava* (1933) p. 194.

[45] A. S. Vainshtein, ed., *Voprosy sebestoimosti promyshlennoi produktsii* (1935) p. 69. Cf. also D. Kondrashev in *Finansy i kredit SSSR* 1952 no. 4 p. 35.

[46] Sh. Ya. Turetski in *Planovoye khozyaistvo* 1936 no. 8 p. 96. Cf. also *SVT* p. 103.

[47] *SVT* pp. 206-7.

[48] L. Maizenberg, *Tsenoobrazovaniye v narodnom khozyaistve SSSR* (1953) pp. 144-5.

[49] S. Rubinshtein and I. Tsypkin, *Sovetski kredit* (1933) part III p. 48.

[50] *SVT* pp. 205-6, and *Sobraniye zakonov* 1932 no. 25, 155 and no. 57, 340.

[51] L. Gintsburg, A. Kosteltsev and V. Khitev, *Sovetskoye khozyaistvennoye zakonodatelstvo* part I (1934) p. 230, and cf. *Ekonomicheskaya gazeta* 4 November 1931 p. 4.

[52] *Sobraniye zakonov i rasporyazhenii* (1931) no. 67, 450.

[53] A. V. Venediktov, ed., *Organizatsionniye voprosy khozrascheta v promyshlennosti* (1932) p. 21.

[54] Khr. Bakhchisaraitsev *et. al.*, *op. cit.* p. 549.

[55] B. Vitin in *Plan* 1934 no. 6 p. 2.

[56] A. V. Venediktov, ed., *Organizatsionniye voprosy* . . . p. 4.
[57] V. Chubar in *Planovoye khozyaistvo* 1935 no. 1 p. 24.
[58] *SVT* pp. 103, 121; the same writer's article in *Planovoye khozyaistvo* 1936 no. 8 p. 96; A. V. Venediktov, ed., *Organizatsionniye voprosy* . . . p. 24; and E. Vitin in *Plan* 1934 no. 6 p. 22.
[59] A. Gordin in *Sovetskiye finansy* 1944 no. 12 p. 21.
[60] *SVT* pp. 27, 122.
[61] *SVT* p. 122.
[62] Sh. Ya. Turetski in *Planovoye khozyaistvo* 1938 no. 6 pp. 70, 74, and L. Maizenberg *op. cit.* p. 223.
[63] Sh. Ya. Turetski in *Planovoye khozyaistvo* 1938 no. 6 p. 73, and his *Vnutripromyshlennoye nakopleniye v SSSR* p. 332.
[64] D. Kondrashev in *Finansy i kredit SSSR* 1952 no. 4 p. 35.
[65] L. Maizenberg *op. cit.* p. 223, and L. Ya. Berri, *Spetsializatsiya i kooperatsiya v promyshlennosti SSSR* (1954) pp. 242–3.
[66] L. Maizenberg *op. cit.* pp. 224, 145.
[67] Sh. Ya. Turetski, *Vnutripromyshlennoye nakopleniye v SSSR* p. 354, and *SVT* pp. 124, 135; cf. also D. Kondrashev in *Finansy i kredit SSSR* 1952 no. 4 p. 34.
[68] *SVT* p. 127, and (for example) A. Korobov in *Planovoye khozyaistvo* 1939 no. 1 p. 60.
[69] Sh. Ya. Turetski in *Planovoye khozyaistvo* 1938 no. 6 pp. 75-76; A. Arakelyan, *Osnovniye fondy promyshlennosti SSSR* p. 24; and V. Sobol in *Planovoye khozyaistvo* 1947 no. 4 p. 60.
[70] S. M. Kutyrev, *Balans dokhodov i raskhodov khozyaistvennoi organizatsii promyshlennosti* book 2 part 3 (1941) p. 32; cf. also D. Granick, *Management of the Industrial Firm in the U.S.S.R.* (1954) p. 146.
[71] Cf. a letter of instruction dated 14 April 1941 of the People's Commissariat of Finance, an extract from which is printed in *Finansirovaniye kapitalnovo stroitelstva torgbankom SSSR*, compiled by I. P. Drozdkov (1947).
[72] N. Jasny, *Soviet Prices of Producers' Goods* (1952) p. 14. Cf. D. Kondrashev in *Planovoye khozyaistvo* 1952 no. 4 p. 35.
[73] A. Nesterovski and P. Tsetlin in *Planovoye khozyaistvo* 1940 no. 3 p. 55, and *Industriya* 18 March 1940 p. 3.
[74] *SVT* p. 293.
[75] A. A. Iotkovski, *Materialnoye snabzheniye i sbyt produktsii promyshlennovo predpriyatiya* (1941) pp. 188–9.
[76] E. Mitelman in *Sovetskiye finansy* 1945 nos. 3–4 p. 9.

PRICING IN SOVIET TIMBER SALES

THE United States Forest Service is faced day by day with problems of price formation in the sale of publicly owned standing timber which raise several interesting questions related to price theory, welfare economics, and public policy. Professor Sidney Weintraub has examined elsewhere some of these aspects of forest policy.[1] The present paper examines in summary fashion the Soviet practice of establishing charges for timber transferred to enterprises and institutions. The period covered is that since the inception of national economic planning in 1928; emphasis is placed on current policy and practice.[2] The subject is of equal interest to Soviet specialists and Western economists generally, for it reflects, in microcosm, the nature of the argument now proceeding in the technical press concerning the 'rationality' of the entire system of Soviet pricing.

I. *Nature of the Problem*

Public ownership implies planned direction of the economy. If planning is not carried out solely in kind, as it is not in the Soviet Union, the planners face a two-fold question: should the fee be set at a height so as exactly to eliminate economic rent accruing to any logging enterprise, or should the fee be set somewhere above or below the precise level of economic rent so as to encourage or discourage exploitation in specific regions? The first question of disposal of differential rent arises from considerations familiar to Western economists. The value of standing timber at a given time is based on a discounting to the present of future net income to be derived from the sale of such timber. Stated somewhat differently, the stumpage value in a given area is a residual representing the margin of profit or the differential rent available to units of the logging industry whose felling and yarding costs or whose costs of transportation are lower than those of the marginal operators. This margin alone imparts value to standing timber, and where no margin exists, timber is considered to be 'inaccessible', that is, it is considered uneconomic to log it.

The second question of extra- or below-rent stumpage charges arises out of corollaries to the above-stated conclusion on differential rent. Specifically, the decision on stumpage charges will conceivably have an effect not only on internal accounting of a logging enterprise but on the further decisions to be reached regarding sustained forest yield and the location of logging activity. One such corollary is that the rate of value growth in a given forest tract is compared with the appropriate rate of interest. When the former ceases to exceed the latter, the timber is cut. A second corollary is that given a requirement

of sustained demand for wood and a reduced availability of virgin forests over time, stumpage prices in any given area will continue to increase until they are equal to the cost of producing a forest from the beginning plus a profit for the person who undertakes such a task. Stumpage prices moving in response to either consideration will have an effect on the location of logging activity and the life of a forest.

In practice, as Weintraub indicates, this body of theory provides 'distressingly vague' guidance to the Forest Service in the disposal of public timber. For example, under the single overall constraint of maintaining the productivity of a given forest tract, the Service attempts to name a 'fair 'price, that is, 'what a willing buyer and a willing seller would pay in a free market'. The fact that there is a single seller and hence by definition not a free market is just one illustration of the limitations of this body of theory. Moreover, it would seem that its limitations are compounded in understanding Soviet price formation in timber sales where all sales are made by a single public authority, and economic growth rather than a balanced equilibrium is a major goal of public policy. Nevertheless, much can be said on the question of timber pricing, differential rent, and the economic effects of stumpage pricing policies in the USSR.

It is important to note in this discussion that the theoretical treatment of differential rent in the Soviet Union has remained substantially unchanged over time. Conceptually, it lies within the boundaries of Western equilibrium analysis, but relies on the Marxian labour theory of value for its ultimate rationale. Generally speaking, absolute rent is said to have disappeared, and differential rent is mentioned most frequently in connection with agriculture. Soviet writers, using a labour theory of value, phrase the differential rent in terms of smaller expenditures of labour per unit of output resulting from particularly favourable conditions surrounding operations in a given case. Stumpage fees established in Soviet forests are said to equal the differential rent attaching to a specific felling area plus a sum composed of several components indicated below. In the remainder of the paper we will examine the alleged principles of formation of stumpage fees, the manner in which this position has been carried over into practice, and finally the impact of this policy on Soviet forests and logging activity.

II. *Soviet Stumpage Policy and Practice*

Standing timber is allocated on the basis of a stumpage (*popennaya*) or root (*kornevaya*) payment. The timber tax (*lesnaya taksa*), established by government regulation, is the basis of the stumpage charge. No stumpage payment existed in the first chaotic years following the revolution, but from July 1923 until September 1930 most logging

organizations were required to pay a fee for timber felled. The charges originally established in July 1923 were based on the structure of prices existing in the former crown forests in 1914 but increased to reflect the rampant inflation of the time. For a short period, in 1925 and 1926, much timber was sold at auction. This system quickly fell under criticism, however, because it was felt that the development of the logging industry required a stable supply of standing timber attached to each enterprise.

Stumpage fees were eliminated in 1930 with a general 'tax reform' in which many individual taxes were replaced by a single 'turnover tax'. As it applied to the timber industry, the tax was paid by the All-Union Association of the Timber and Woodworking Industries. The Association was a direct antecedent of the timber commissariat formed in 1932. The original tax rate was 35.2%, and was to be paid on gross sales or turnover of the Association. It may be that the initial rate approximated the rate of the stumpage fee it replaced. There were important differences between the two charges, however. The turnover tax was applied only to timber felled *and* sold. Thus, standing timber became 'costless' to the logging organization. Also, in 1930 the average level of stumpage fees for industrial wood in the timber-deficit areas of the south and west was almost three times that in the timber-surplus areas. The elimination of this differential conceivably could have had an influence on the location of logging activity, on which more below.

On 1 January 1932 stumpage fees were reintroduced for all standing timber allotted to individuals and organizations except 'principal producers', that is, enterprises of the timber commissariat, the Main Administration for Forestry within the Commissariat of Agriculture, and the Commissariat of Ways of Communication (railways). This list was extended rapidly, however, and in effect all major groups of loggers were exempt. Also, the practical importance of the turnover tax was eliminated when the rate was reduced to 1.0% in 1935 and 0.5% in 1936.[3] In 1949 the tax was abolished on most producer goods.

Some brief but interesting discussions appeared in the technical literature of the 1930s suggesting that stumpage charges be reintroduced. Generally, such charges were said to be necessary 'in the interests of better organization of forestry, of more complete utilization of timber in the northern [surplus] regions and a more careful attitude toward forests in the sparsely forested regions, and also in the interests of properly constructed, unified zonal prices for wood products'. Such charges were not introduced until 1 January 1949. Until that year, the 'felling permit' issued by forestry authorities was the major instrument of Soviet forest utilization policy.

III. *Stumpage Differentiation*

In principle, timber taxes are high enough to cover the cost of forestry expenditures and additions to the 'accumulation fund' of the forestry organization in a given timber tract. They are adjusted to allow for local differences related to yarding costs, timber type and size, and the differential rent attaching to the region.[4]

Region, Species, and Quality. Forests are divided into seven timber-tax zones: I—southern, including the steppe region of the Ukraine: II—forest-steppe; III—mountain forests of the south, including mountains in the Caucasus, Central Asia, and the Western Ukraine; IV—central, including the central industrial region of the European USSR; V—main logging, including northern European USSR; VI—Siberia; and VII—Far East, including Sakhalin.

In the northern and north-western regions, where there is a huge reserve of mature and over-mature timber, stumpage fees are lowest, while in the timber-deficit southern and western areas the charges are highest. Timber suitable for industrial wood is priced higher in all zones than is that suitable for fuel wood. Common coniferous species are priced lower than are broad-leaf varieties. Stumpage differentiation by region and end use in 1957 is shown in Table 1. Current figures are not available for the Siberian and Far Eastern zones, but on the basis of tax rates existing in 1949 it may be assumed that they are lower, at least as applicable to industrial wood, than all other rates.

TABLE 1

TAX ON PINE AND FUEL WOOD OF AVERAGE HAUL DISTANCE[a] BY REGIONAL ZONE, 1957 (in rubles per barked cubic metre)

Regional Zone	*Industrial Pine*[b]	*Fuel Wood*
I South	24	8
IV Central	8	2
V Main Logging	2	0.1

Source: N. P. Anuchin, *Promyshlennaya taksatsiya lesa i osnovy lesnovo khozyaistva* (Industrial Valuation of Forests and the Bases of Forestry), (M., 1957) p. 214.

[a]10.1–17 km.

[b]Medium size, 13–24 cm. upper diameter.

In 1949 timber taxes were differentiated by species as indicated in Table 2. These rates were apparently halved in 1950, and the two Siberian zones grouped into one. At present they are comparable with the level of rates cited in Table 1. Species differentials have been retained, although the exact extent of the spread is unknown.

TABLE 2

TAX BY REGIONAL ZONE AND SPECIES UNDER AVERAGE HAUL CONDITIONS,[a] 1949 (in rubles per barked cubic metre)

		Industrial Wood of Average Size and Haul					
	Regional Zone	*Pine*	*Birch*	*Aspen*	*Oak*	*Beech*	*Larch*
I	Southern	52	38	34	86	71	52
IV	Central	18	16	13	44	36	18
V	Main Logging	4	4.5	3	23	—	4
VIII	Eastern Siberia	1	1	0.4	—	—	1

Source: W. D. Bowles, 'Economics of the Soviet Logging Industry', unpublished doctoral dissertation (Columbia University, 1958) p. 276.

[a]Haul distance of 10.1-17 km.; medium size of 13-24 cm. upper diameter.

Size of Timber. For purposes of taxation, industrial wood, depending on the thickness of the highest diameter measurement of the trunk, is divided into small (3-12 cm.), average (13-24 cm.), and large (25 cm. and over). In 1949 in zone IV, the central region, barked industrial pine wood with an average haul distance was subject to the following stumpage rates (in rubles per barked cubic metre): large—12, medium—8, small—6. Thus, larger timber was more expensive per unit of volume than small.

Distance of Haul. A complex system of differentiated stumpage fees is established on the basis of distance and condition of haul from the felling area to the railhead or floating point. Soviet practice is to use a double landing system (unlike their American counterparts who use one, generally speaking), skidding the trees to the upper landing, collecting them, and then transporting them to the lower landing, from which point they are finally shipped. An indication of the differentiation based on the length of local haul is provided in Table 3.

TABLE 3

TAX ON PINE OF MEDIUM SIZE BY DISTANCE OF LOCAL HAUL IN THE CENTRAL REGION (in rubles per barked cubic metre)

Tax Group	*Haul Distance (in km.)*	*Tax (in rubles per barked cubic metre)*
I	0-4	14
II	4.1-10	11
III	10.1-17	8
IV	17.1-25	6
V	25.1 and over	4

Source: N. N. Chikilevski, *Lesoustroistvo* (Forest Management) (M.-L., 1957) p. 96.

The inverse relationship between haul distance (cost) and timber tax is heightened where floating is required. Under this circumstance, all stumpage payments are reduced by the following percentages for each zone: southern—10, forest-steppe—15, central—25, and remaining four zones—60. The timber tax is increased over time in an area as transportation routes to that area are improved. However, in cases where expenditures must be made on the melioration of small rivers and streams for timber floating, timber taxes are retained at their old levels for five years to allow logging organizations to recoup the cost of improving the waterways.[5]

IV. *Economic Importance of Stumpage Payments*

To Western observers it might appear that the Soviet Union is simulating market conditions in establishing stumpage prices: timber remote from markets and transportation is less expensive than that close to markets; common coniferous varieties cost less than most useful hardwoods; and large timber which yields relatively valuable end products costs more per unit of volume than does small. Precisely the same statements might be made about timber sales in the American markets, including sales made generally by the Forest Service. However, an influential Soviet writer stresses that Soviet stumpage fees are too small in relation to total logging costs. For example, it is said that in 1949 the timber industry paid an average of ten rubles per cubic metre for standing timber, which constituted about 7% of total logging cost.[6] Following a downward revision of stumpage prices in 1950 (which coincided with a downward revision of timber wholesale and industrial prices generally after the high levels established in 1949), stumpage fees were said to constitute about 4% of logging costs.[7] In contrast, stressing relatively low Soviet stumpage levels, another Soviet writer states that the share of the stumpage fee in total logged cost of wood in the United States in the pre-war period was 18-20% for coniferous and 25-28% for hardwood.[8] While Soviet stumpage fees may thus appear to be low when compared with those in the United States (and with previous Soviet levels), there is at the same time a Soviet differentiation of stumpage fees depending on site, size, etc., strikingly similar to American experience.

To evaluate the meaning of this comparison, it might be well first to sketch briefly a picture of the typical Soviet logging enterprise and its position within central planning. The *lespromkhoz* or logging enterprise is the lowest major link in a planning hierarchy which today rises through a regional economic council (sovnarkhoz) and finds its locus of power in the central planning apparatus of Gosplan, the State Planning Committee. (Prior to 1957 the chain of command

was through the industrial ministry of the timber industry, and, for so-called 'self-supplier' logging organizations, through their parent ministry.) The plan assigned to each logging enterprise specifies such important goals as type and quality of production for the year, labour force, productivity increases, and level of costs and profits. The enterprise is headed by a director who is, at least in theory, in full charge of the operation within the limits set by higher authorities. The enterprise is a legal entity which may sue and be sued in Soviet courts. Each enterprise operates on the basis of *khozraschet*, or economic accountancy so-called. That is, it is granted its initial capital and thenceforth has its own profit and loss statement and balance sheet, and is responsible for its own debts. Relationships with other enterprises are conducted by contract at transfer prices fixed by higher authorities. It is in this context that an individual logging enterprise is affected by stumpage charges.

The re-establishment of stumpage fees in 1949 was accompanied by public pronouncements stressing their need for several reasons which can be grouped into two categories: those which alleged that such charges were necessary to encourage efficient operation of the logging enterprise, and those which maintained that stumpage payments would aid the relocation of logging activity to areas with abundant timber supplies. To paraphrase, one group was concerned with least-cost operation and wasteless use of resources, while the other group of reasons related to the social costs (including those associated with providing for posterity) of unlimited forest depletion. We shall examine these two positions in the above order.

'*Control by the Ruble.*' Stumpage payments are said to be necessary as a basis of financial discipline and efficient operation in a logging enterprise, that is, to provide 'control by the ruble' (as distinct from direct administrative intervention). The principle on which this is alleged is clear. All standing timber in a felling area is assigned a price. Hence, a logging enterprise presumably is under a double imperative: remove all the timber from the cutting areas because all of it has been paid for, and convert all timber logged into end products of the highest value possible. In the Soviet institutional context, both conditions would presumably follow on the assumption that the planned profits of the enterprise reflect fully the cost of standing timber and the possibilities of its optimal conversion.

At present, the system of stumpage charges is under increasingly intense criticism in the Soviet timber press mainly on the ground that stumpage charges are so small that they do not serve to force the logging enterprise to economize on timber.[9] One well-known Soviet authority stated recently that from the moment taxes were

reduced in 1950, production conditions in the timber industry began to deteriorate.[10] Although this statement is perhaps too extreme, countless incidents could be cited indicating the large quantities of wood left standing after 'conditional clear cutting'[11] of the felling area, of wood cut and then left in the forests and along river banks, and of expensive timber being converted into inexpensive end products.

Allegedly, timber is wasted not only in the forest but in its fabrication and final use because the price of stumpage is so low. A Soviet writer notes, for example, that timber is used much less efficiently than in the United States, as shown in Table 4. The point is that influential writers are now insisting that price, including the timber tax, must play a greater role in stimulating better use of wood in the primary phase of procurement and also in fabrication.[12]

TABLE 4

QUANTITY OF END PRODUCTS DERIVED FROM 100 CUBIC METRES OF TIMBER, US and USSR (in cubic metres)

Product	*US*	*USSR*
Lumber	31	21
Plywood	2	0.3
Paper (converted measure)	4.3	0.5
Paperboard	4.2	0.2

Source: P. V. Vasilev, 'K voprosu novykh lesnykh taksov' (On the Question of New Timber Taxes), *Lesnoye khozyaistvo* 1958 no. 10 p. 51.

To this end, a suggestion has been made by a forest authority that the price of stumpage be increased four or five times.[13] Such an action, however, would obviously raise the difficult question of suitable levels of profit and transfer prices in the logging industry. Even in Marxian theory, the stumpage payment is viewed essentially as a residual. The simple suggestion that stumpage prices be raised might appear to belie this, for increased stumpage prices would in turn lead to increased transfer prices. It may be concluded, therefore, that Soviet writers are asking for an upward revision of wholesale transfer prices of logging products to stimulate greater economy in wood and to *make possible* the increase in stumpage prices necessary to instil efficient operation in logging.

The problem here may be stated simply. In 1955 the average cost per cubic metre of logged timber in the timber ministry was approximately 75 rubles, which would indicate an average stumpage fee of over two rubles per cubic metre. At the same time, the common charge for timber in the areas of greatest logging activity was perhaps

one ruble or less per cubic metre. Possibly the higher *average* stumpage charge in part reflects continued cutting in the timber-deficit areas where stumpage fees are relatively high. Such cutting undoubtedly contributed to the notorious financial losses in logging which have persisted in the post-war period after the elimination of similar operating losses in other industry generally.

In contrast to cost, in 1955 the average price received by ministerial enterprises for a cubic metre of logged wood was about 70 rubles, or five rubles less than cost. The difference was made up by state 'subsidies'. As losses continued, and average labour productivity did not increase sufficiently to permit significant cost reductions, wholesale timber prices were raised in 1957 by about one-third,[14] apparently more than enough to render logging enterprises profitable and subsidies unnecessary.

Now the suggestion is being made that stumpage prices be greatly increased. An increase of the magnitude suggested would obviously render logging 'unprofitable' again. The result, given unchanged wholesale prices, would be the introduction of subsidies anew, a step Soviet planners would be loath to take given their preconception that control by the ruble is weakened by subsidies. On the other hand, an increase in stumpage prices accompanied by an increase in wholesale prices might be equally unpalatable because it would require revision of all cost plans cast in the old wholesale timber prices.

This is where the matter stands at the end of 1959. The *structure* of Soviet stumpage prices may contribute to a degree of economy in logging operations. At the same time, the low *level* of stumpage charges is under criticism because it allegedly leads to wasteful logging operations and is associated with low transfer prices which lead to wasteful use of wood products throughout the Soviet economy.

Location of Logging Activity and Sustained Yield. Soviet forest authorities allocate timber for cutting on principles determined outside the authority of the logging enterprise, as is also true of American forest authorities. In the American case, the policy is governed by a long-range plan regarding a desirable 'tree population'. In the Soviet Union the allocation of standing timber is governed basically by the requirements for wood products embodied in the national production plan. Moreover, the Soviet logging enterprise, faced with its individual plan targets, must pay the asking price for the timber unlike the American firm which bases its action on expected prices and costs and the necessity of making a profit. The sharp regional differences in Soviet stumpage charges are interesting in this respect.[15]

Local variations in stumpage charges, as indicated above, influence the nature of logging activity to the extent that they are high enough

to be of more than nuisance value. Similarly, as between two different regions, inexpensive timber in one area could, other things being equal, attract logging enterprises to that region.[16] The question may be put: What did Soviet authorities have in mind when, for example, they made the price of pine fifty-two times higher in the southern region than in Eastern Siberia?

Southern timber is already seriously depleted, although exploitation continues to be heavy in the region because of its proximity to major timber-consuming centres. Such cutting is often against regulations but legal because it is specifically sanctioned in each case by a felling permit issued by forestry authorities. Any loss incurred by a logging enterprise is made up by subsidy. In this light the stumpage fee is seen to play a minor allocative role; in effect, timber is moved into use *despite* its frequently high price.

It is tempting to speculate regarding the extent to which central authorities mean to influence decision-making in the logging enterprise or its superior organ in the matter of location. At present, Soviet logging activity has shifted in large part to timber surplus areas where stumpage prices are relatively low. This shift has occurred primarily since 1950, that is, after stumpage fees were re-established.[17] It would be far too great a leap to conclude, however, that the shift was made primarily because of the institution of regionally differentiated timber charges.

One of the stated reasons for the reintroduction of timber charges in 1949 was that they form the economic basis for the transfer of logging operations to timber-rich areas. Specifically, what may be meant is not 'economic basis' but rather 'accounting basis'. The high stumpage charges in the timber-deficit areas, given only mildly differentiated timber wholesale prices, would in effect drain off to the state coffers the differential rent attaching to operations in these favourable locations. In this view, the charge would represent merely an accounting cost which would be checked by higher authorities in their evaluation of the economic effectiveness of the enterprise, and the system of *khozraschet* would remain intact. It would follow that geographic differentiation of stumpage fees may not be the best guide by themselves for understanding Soviet conservation policy. Rather, the determination of the rate of forest utilization in a given area might be more fruitfully examined through a study of direct controls (conservation regulations, policy on felling permits, etc.).

V. *Concluding Remarks*

The USSR annually logs a larger quantity of wood than any other nation. Timber has always been considered to be one of its most

important natural resources, a key raw material in industrialization and the advancement of consumer welfare. It is interesting to see, therefore, a Soviet writer state sarcastically that forest authorities are mismanaging this important resource:[18]

> The forests are dwindling at an incredible rate and are not being restored on a very large scale. We do not care whether even a blade of grass remains after we are through. What do foresters do? Mainly they sell timber to the procurement agencies—allocate stands for cutting and figure payment for logs. This operation takes all their time and energy. They have essentially become timber merchants.

This statement is a typical example of the hortatory reportage practised in the Soviet Union, but it does contain the necessary elements of truth. Forests are being utilized in some regions at a rate far exceeding that which might be established on sound silvicultural principles. In a word, forests in many regions are being destroyed as the industrialization drive continues apace. In the allocation of forests, stumpage payments apparently serve the limited purpose of facilitating the movement of timber into the hands of the loggers as *some* cost. As Weintraub said of the prices established by the United States Forest Service, 'An allocative objective is not involved since the volume of timber cut is decided by other criteria'.

As prices, Soviet stumpage fees are primarily of book-keeping significance, and apparently of limited importance even in this respect. Such fees undoubtedly siphon off to the state some differential rent accruing to individual enterprises, thus enhancing the effectiveness of control by the ruble. The question remains, however: are these fees substantial enough simultaneously to encourage improved efficiency in logging over time and to stimulate economies in the final use of wood? Further, the importance of timber taxes as a factor determining or influencing logging location remains obscure. At present, these questions are under review in the Soviet technical press.

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[1] 'Price-Making in Forest Service Timber Sales', *American Economic Review* Sept. 1959.

[2] References for data cited, unless otherwise indicated, may be found in W. D. Bowles, 'Economics of the Soviet Logging Industry', unpublished doctoral dissertation (Columbia University, 1958).

[3] In 1938 the rate on round and fuel wood for 'general consumption' was 1.0%. Wood considered as a producer good was taxed at the lower rate.

[4] Complete data for the present period are not available. Nevertheless, while some of the absolute magnitudes may differ today from those presented here, the degree of differentiation in stumpage prices remains fairly accurate.

[5] N. N. Chikilevski, *Lesoustroistvo* (Forest Management) (M.-L., 1957) p. 96.

[6] S. G. Stolyarov, 'O lesnykh taksakh' (On Timber Taxes), *Lesnoye khozyaistvo* (Forestry) 1958 no. 12 p. 50.

[7] *Lesnaya promyshlennost SSSR: Statisticheski sbornik* (Timber Industry of the USSR: Statistical Handbook) (M.-L., 1957) p. 150.

[8] P. V. Vasilev, 'K voprosu novykh lesnykh taksov' (On the Question of New Timber Taxes), *Lesnoye khozyaistvo* 1958 no. 10 p. 52.

[9] 'In the zones where the basic timber procurement is done, a cubic metre of average coniferous timber located 17 km. from the road costs 20 kopeks. But if the timber is floated down a river, it costs 12 kopeks. [100 kopeks = 1 ruble.] Now we ask you, is a timber procurement official going to worry about a tree left in the forest when the cost of the tree is a matter of a few kopeks?' (*Izvestiya* 17.ix.58, translated in *The Current Digest of the Soviet Press* 22.x.58).

[10] Vasilev *loc. cit.* p. 49.

[11] *Uslovno-sploshnaya rubka.* Under this system of cutting, all deciduous species and all coniferous wood suitable for fuel wood is left standing. The explanation usually offered for the practice is that it is impossible to float satisfactorily deciduous species, and that there is no demand for fuel wood.

[12] D. I. Novakov, 'Kornevaya plata kak kategoriya lesnoi ekonomiki' (The Root Payment as a Category of Forest Economics), *Lesnaya promyshlennost* (Timber Industry) 1959 no. 2 pp. 24-26.

[13] It is difficult to define the present level of average stumpage charges from Soviet statements. The present writer's independent calculations support an estimate presented here of two or three rubles per cubic metre. The suggested new level of stumpage prices is 20-25 rubles which, on the basis of our average stumpage estimate, represents an increase of ten or twelve times. However, a figure used in the current Soviet discussion of average stumpage prices is 4.6 rubles; thus, the suggested new level would represent an increase of four or five times. At any rate, it is clear that the suggested new stumpage level would represent a substantial increase over the old, whatever its precise level may be.

[14] A. I. Kremnev, *Ekonomika lesnoi promyshlennosti SSSR* (Economics of the Timber Industry of the USSR) (M.-L. 1958) p. 46.

[15] Wholesale transfer prices, as distinct from stumpage charges, established after the price reform in 1949 were only mildly differentiated by region. The variation may have been of the order of 1:1.6 compared with stumpage variations with a high-to-low ratio as high as 1:50 or more on industrial pine. It is not known whether the same wholesale price differentials have been retained since the price increase of 1957.

[16] Strictly speaking, it is possible to distinguish between producer determination of location of logging activity (which would rest upon considerations of stumpage payments, wholesale timber prices, and costs) and consumer determination of location (which would rest upon wholesale prices and freight costs). Freight charges on wood shipments until 1955 were the direct responsibility of timber consumers, not shippers, inasmuch as prices were quoted f.o.b. point of origin. As of 1 January 1955 prices have been established for wood products, with some exceptions, on an f.o.b. destination basis. Conceivably, this could counteract financial pressure designed to force loggers to move out of the depleted areas near large markets, for the logger would now have a financial incentive to remain near markets so as to minimize transport costs.

[17] Coupled with a relative increase in logging costs in the deficit areas in 1949 was a freight rate revision. In that year, freight charges were increased over the old levels, but rates applicable to longer hauls were increased less than those applicable to shorter hauls. In 1955 the ton-kilometre rate was reduced for wood products, with the greatest reductions falling on the relatively longer hauls. Both changes had the effect of increasing the attractiveness of wood purchases in the distant timber-surplus regions.

[18] *Izvestiya* 17.ix.58.

A NOTE ON RATIONALITY AND EFFICIENCY IN THE SOVIET ECONOMY—II

THE items considered in the present, concluding, part of this Note in a rather motley way are Steel, Machinery, Timber, Artificial Fibres, Agriculture, Construction, Transport, Planning. For reasons of space, no attempt is made at comprehensive treatment even of the main types of organizational inefficiency and mental irrationality. The purpose is to note aspects that have received little or no attention from students of the Soviet economy.

Steel

This item should have been handled by Gardner Clark of Cornell. It does not seem that everything has gone smoothly in the development of this industry in spite of the fact that, as in many other fields, the USSR had and still has good experts, such as the late Bardin. Too many ignorant persons are having the decisive say.

There is, for example, the problem of the Kursk magnetic anomaly located in the heart of European Russia (Kursk is about 500 km. south of Moscow). The presence there of enormous amounts of iron ore was proved long ago; but it has also been known that the cost of bringing the ore to the surface would be very high. The development of this area, which has been contemplated for a long time, is now at last starting. Should this have been done twenty or thirty years ago, or is it still not worth while? The writer cannot answer these questions; but on the basis of what Clark says of this ore (he called it 'miserable')[1] the success, if any, will be costly.[2]

The ore of the Kursk anomaly—which is certainly not cheap—is to be processed in the metallurgical plant of Lipetsk, located to the north-east of Kursk. Donets coke, which is the most expensive in the USSR (except for such special cases as Pechora) will have to be used with it in the production of pig iron—altogether not too favourable a prospect. The idea may have been appealing when the rich resources of petroleum and gas beyond the Volga were not fully realised; but the development of these resources is strengthening the East and weakening the Donbass and everything that depends on it. A certain decentralization of pig iron will certainly be attained by the development of the Kursk magnetic anomaly, but this may be the only gain and there may be even higher costs involved.

While the advantages of developing the Kursk magnetic anomaly may be problematical, the great blunder of constructing large metal-

lurgical combines at Cherepovets and Rustavi is almost freely recognized in the Soviet press. Cherepovets is about 500 km. east of Leningrad; mediocre iron ore has to be brought in from the far north, beyond the Arctic Circle, and must be very expensive even at the point of production when it has been reduced by concentration to a state fit for smelting. Coke or coking coal must be brought from the distant and expensive Pechora area. The only advantage seems to be the minor one of the availability of scrap in Leningrad, which is also quite a distance away. Rustavi is in Georgia, not far from Tbilisi. The area has neither iron ore nor suitable coking coal; there is no reason whatever why pig iron should be produced there. But if it has to be produced, the most sensible way would probably be to bring coke all the way from the Donbass and iron ore from Krivoi Rog (which is west of the Donbass and still further away). There is only the minute advantage of manganese ore located in the west of Georgia. The Cherepovets combine was started in 1947 and was still far from completion early in 1960. The construction at Rustavi was begun in 1945 and it was expected in early 1958 to be completed by the end of the year.[3]

According to A. G. Zverev, the then USSR Minister of Finance,[4] the average price of pig iron (including an allowance for profit) was 330 rubles per ton in the USSR. This indicates an average cost of production of around 300 rubles, but 220 rubles per ton is quoted for the large Kuzbass combine in Western Siberia. The average production cost at Rustavi is stated by Zverev to be 488 rubles, and at Cherepovets 613 rubles per ton—or 60 and 100 per cent. respectively more than the average production cost in the USSR as a whole (which is itself of course inflated by the inclusion of the high figures for Rustavi and Cherepovets). Any advantage of location in respect of the consuming markets can offset only a small part of this great difference in costs. In 1958 the Georgian SSR produced 670,700 tons of pig iron, 976,600 tons of steel, and 687,700 tons of rolled steel.[5] Output data for Cherepovets are unfortunately not available, but it is expected to be a very large enterprise when completed.

The small Amur metallurgical plant operates at Komsomolsk in the Far East.[6] In view of the absence of any suitable raw materials, production costs must be enormous. Clark wrote in 1956:[7]

> It would make good economic sense for the Soviets to finish the single, symbolic blast furnace at Komsomolsk, and then to rely on Manchuria [i.e. China] to provide the bulk of the iron and steel needed in the Soviet Far East.

But Clark's recipe did not apparently suit the palate of Soviet decision-makers; the Amur plant is now also producing steel and rolling it.

The Machine Industry

In footnote 7 of the first instalment of this article David Granick's favourable conclusion as to the rationality of technological decisions in the machine-building and metal-working complex of industries was cited. His conclusion was principally based on the output of lathes in 1928-32, which he treated as the period of the first five-year plan. It would be more proper to treat the second half of the period as that of the 'All-out Drive'[8] for an industrial revolution in no time, with socialization of the villages, 'gigantomania' and bacchanalian planning, all of which led to such phenomena as the halving of real wages and—what is particularly important for our present analysis—an immense deterioration in the quality of the goods produced by industry. The period ended with catastrophe in the winter of 1932-3, when industrial production was declining, the transport system was paralysed, and hundreds of thousands, if not millions, died from starvation. It would have been a miracle if, in one way or another, the output of lathes also were not adversely affected by all these disastrous developments. In any case, a successful analysis must take these extraordinary surroundings into account; it must show that the miracle—the seemingly impossible—actually happened.

Richard Moorsteen, who discussed Granick's paper at the Berkeley symposium, did not believe that Granick had proved his point, although he failed to put the problem into the wider framework suggested above (*Value and Plan* p. 291).

The editorial in *Ekonomicheskaya gazeta* of 4 April 1961 is entitled: 'To Raise the Quality of Lathes'. In complaining about the quality of many produced lathes, the editorial speaks of primitive technology of production, insufficient specialization of the factories producing lathes, and so on. The editorial concludes: 'It is a matter of honour of the producers of lathes, with the energetic help of adjacent industries..., to atttain a drastic improvement of the quality of the output'.

But not knowing anything of lathes, this writer is reluctant to deal with the topic. He does, however, know a little about farm tractors and farm machinery. It is actually common knowledge—and it was implied in the statements of no less a witness than the gentleman who pounded his desk with his fist at the session of the UN at the very time this paper was being written (26 September 1960)—that the tractors which had been built over a period of more than a quarter of a century were of the wrong type and size. In his theses on the reorganization of industry (*Pravda* 30 March 1957) Khrushchev expressed the opinion that 90% of all farm tractors should be row-crop tractors; only one-third of them were of this type at that very time.

Tractor production was in an immensely primitive state at the time

of Stalin's death; forty to forty-five thousand—or more than one-half of all tractors manufactured—were of a single model, the large diesel caterpillar type DT-55, which was being produced simultaneously in three factories at Kharkov, Stalingrad and in the Altai. For a long time the writer thought that the DT-55 was a good tractor, but even this has proved incorrect.[9] In addition to the DT-55 a few thousands of an even larger caterpillar type (the S-80) were produced in Chelyabinsk. The Minsk factory produced several thousands of the mediocre, specifically very heavy, Kirovets-35, a caterpillar tractor,[10] while the Vladimir factory turned out about 15,000 'Universals', a row-crop wheel tractor which was a reproduction of a model (about 20 years old) of the Farmall, produced by the International Harvester Co. in Chicago. A shop in Kharkov was assembling a few thousand wheel tractors of the type KhTZ-7, a small, indeed primarily a horticultural, model. This was the sum total of all that was being produced to meet all the different conditions of soil and climate in a vast country.

Caterpillar tractors, and especially large ones, were in the great majority. The DT-55 was, and still is, the basic Soviet tractor for all types of climate and topography.[11] The other farm machinery was matched to the tractors. Only huge combine grain harvesters with a width of 15-20 feet were, and still are, produced.

All that the tractor types available at the time of Stalin's death could take care of was the growing of small grain in steppe areas, and even for this the number of tractors was far from enough. Cultivation of row crops, haying and other operations requiring little power in all areas, and all crops in the vast non-steppe areas, were provided for either not at all or very improperly. While 89% of small grains was harvested with the combine in 1959, only 20% of potatoes was so harvested. The proportion of potatoes cultivated by machine is given at 64%, but the figure probably includes acreage cultivated primarily by hand.[12]

As recently as 1959 only half of the small grains were harvested with the combine in Belorussia, which can be considered typical of the non-steppe areas, and the proportions were much smaller, down to zero, in the harvesting of other crops in such areas.

Insistence on manufacturing large caterpillar types while the types primarily needed—small tractors, row-crop and others—were neglected, was a particularly absurd feature, but not the only one, in the field of tractor construction. The only serious development in tractor construction after World War II and until quite recently seems to have been the shift from kerosene to diesel fuel. Otherwise there was stagnation. The fact that due to technical innovations the small and medium caterpillar was recently losing in competitive power with the

wheel tractor was neglected, just as the rising speed of tractors, etc., did not receive attention.

About 1958 a campaign was suddenly started to raise the speed of all tractors, to do it by a big jump (30-40%) and to do it, moreover, in a big hurry. The plenary session of the CC of the Party in December 1959 proclaimed this to be 'a very important aim of the development... in the next few years'. The stated large jump in speeds seems even to be thought too little: M. Yakobi of the Tractor Laboratory, All-Union Scientific Research Institute of Mechanization of Agriculture, demands even greater speeds; his article in *Ekonomicheskaya gazeta* 27 January 1961 is indeed entitled 'To Double the Speeds of Tractors'. But no attention has been given to the fact that it was the wheel tractor which proved particularly adapted to higher speeds.

At the time of writing (the end of 1960) practically the whole tractor industry is in a state of upturn. The Kharkov tractor factory was shifted in 1960 to the output of the DT-75, which due to its greater speed is assumed to do about 30-35% more work than the DT-54. No less a person than A. Izotov, chief specialist of the State Committee of the USSR Council of Ministers for Automation and Machine Building, writes on this tractor: 'The Kharkov people created, for example, the fast tractor DT-75. Its productivity is 35-40% larger than that of DT-54, which it replaces, but the defects remained the same' (enumeration of the principal defects follows).[13] So far as the defectiveness of certain important parts is concerned, the DT-54, DT-75 and all other Soviet tractors seem to share the fate of all Soviet machinery. This will be discussed below.

The Stalingrad and Altai factories were still producing the DT-55 or DT-54 at the beginning of 1961. Reluctance was shown to shift them to the DT-75 model produced by the Kharkov factory in view of the recognized defects of this model. The source from which the above information is obtained (M. Yakobi) insisted that the Stalingrad and Altai factories should be producing the Kharkov model until the time when 'a really first-class, reliable new model is developed'.

Both the Stalingrad and Altai factories have developed replacements for the DT-55 or the DT-54. Of the suggested model of the Stalingrad factory the already quoted Yakobi writes in *Trud* (23 November 1960): 'Tests have shown serious defects in the machine. At least two years will be needed to put these right and set up production'. With reference to the tractor D-4, a fast model developed by the Altai factory from the DT-55, Izotov reported that the motor for this tractor must be supplied by the Altai Motor Factory, that this motor has great defects and that it is doubtful whether it will be possible to eliminate them.

There is no room to discuss the other tractor models. At the end of 1960 the Soviets did not, apparently, have in mass production a single important tractor model which they would themselves have considered first-class and not subject to replacement in the near future. It would not be surprising if the caterpillar models, made to go faster than the character of these machines permits, will need substantial alterations soon after they are placed in production. And caterpillars will probably continue to constitute a large part of total tractor production in the USSR, although this is against technical requirements.

Farm machinery other than tractors was also in a state of full reorganization (or, perhaps more accurately, a state of disorganization) in 1959 and 1960.[14] One indication of this is the reduction both in output and delivery of many types of farm machinery in 1959 (*Narodnoye khozyaistvo SSSR v* 1959 *g.* pp. 218 and 422). In both cases the declines are officially commented on in the statistical yearbook itself as caused by the reorganization. It is specially noteworthy that data on harvesting machinery for technical crops are completely omitted from this statistical yearbook. The special literature is full of descriptions of poorness of the various types of farm machinery and on the need to replace present models, of the great disadvantages due to the absence of machinery for some operations and the lack of any machines suitable for certain areas or types of land (north-east, north-central, hilly land, etc.) and certain crops, as well as difficulties encountered in putting out good new models. A four-day conference with wide attendance was held at Rostov-on-Don in January 1960 to discuss the subject (or rather, the grievances).[15]

A system of farm machinery which considers the different requirements of the various areas is not expected to be worked out in the USSR before 1½ to 2 years.[16] This is what is hoped for and it will then be available at first only on paper.

The important question of new designs of farm machinery to suit higher speeds does not seem to be getting the necessary attention. The writer has seen no mention of the *shape* of the ploughs being changed correspondingly with the change in the speed of the tractors. It is impossible to assume that the Soviet engineers do not realize that if tractors with the increased speed are coupled with the old-model ploughs the soil will be turned excessively. They may not be permitted to raise the problem. Somebody decided that first the tractors would be speeded up and then the time would come to think of the implements with which they work. Developing interdependent things at very different rates is a feature of the Soviet economy which is claimed by its apologists to 'develop smoothly and proportionately according to plan'.

It remains to be seen whether the USSR will succeed in developing a good line of tractors and farm machinery in the reasonably near future. One thing is clear: the respective industries were in very bad shape in, say, 1958 or 1959.

There is sufficient authoritative evidence showing that Soviet machinery in general, and this includes Granick's lathes and this writer's tractors and farm machinery, are wanting in quality, including durability and longevity. In a letter to *Kommunist* (1960 no. 12 p. 124) from Kazan, which was approvingly cited by the editors, B. Kolesnikov wrote: '. . . frequently 8-10 times as much is spent on repairs of machinery during its useful life as on its fabrication'. In an article significantly entitled 'On Reliability, Longevity and Economic Features of Machinery', in the economic daily of the Central Committee of the Party, *Ekonomicheskaya gazeta*, 22 September 1960, the same Kolesnikov specifically mentioned an engine produced by the Ulyanov factory, costing 650 rubles, which has an allowance (or norm) for repairs of 6,400 rubles during only five years of service. The same 8-10 times as much for repairs as for the total initial cost of a machine is mentioned in an authoritative article, which was to start a special campaign, 'Are Capital Repairs of Equipment Needed?' by A. Vladzievski and M. Yakobson (*Kommunist* 1959 no. 9 p. 33). The suggestions made in their article were discussed in October 1959 by the collegium of the State Scientific-Technical Committee of the USSR Council of Ministers. The Committee arranged for a nation-wide discussion and eventually the majority of the proposals of the two authors were accepted (*Kommunist* 1960 no. 12 p. 124).

Kolesnikov calculated that the immense amount of more than 100 billion (thousand million) rubles is spent annually on repairing the machinery. But it is preferable to deal with less comprehensive items. According to Vladzievski and Yakobson, three billion rubles is spent annually on repairing lathes and six billion on repairing tractors. Since there were 996,000 tractors on Soviet farms at the end of 1958,[17] and their average price was around 20,000 rubles, the cost of the *annual* repairs represented not less than 30% of the cost of the tractors when new.

The cited sources contain a lot of other enlightening evidence. According to Vladzievski and Yakobson (p. 36) the cost of capital repairs, including modernization, of the lathe 1336M exceeds by 21% the cost of the new model of this machine, of the lathe 1A-62 by 4%, etc. (the 'etc.' is theirs).

There are two reasons for the phenomenon. Due to insufficient supply of new machines, old machines ripe for scrap continue to be used. This shortage is often the cause of the apparently absurd situation

that machines are repaired and modernized at a cost exceeding the cost of the newest models of the same machines, although 'normally' the new machines 'have a 25-30% higher productivity' in the opinion of the cited authors.

The second, and more important, reason for the great expenditures on repairs is the inadequate quality of the machinery and of the spare parts to it. Vladzievski and Yakobson (p. 38) wrote: 'Improving the quality of the produced machines and their longevity is a most important national-economic task'. Kolesnikov (*Ekonomicheskaya gazeta, loc. cit.*) seconded this: 'The experience of the Tatar sovnarkhoz persuades us that the problems of reliability, longevity and economic value of the produced machines must be assigned national importance'. Vladzievski and Yakobson elaborated (p. 39—their italics): 'The use of high-quality materials, the adoption of technological processes operating toward increase in durability, the increase of adaptability of the machines to repairs, *would permit duration of service to be lengthened and capital repairs to be avoided during the whole period of use.*'

In the wide discussion of the problem of capital repairs mentioned above, a number of institutions and enterprises answered the inquiry with the blunt statement that the first step is to solve the problem of increasing the durability of the machinery and of its adaptation for repairs (*Kommunist* 1960 no. 12 p. 124).[18]

The perennial mad drive for *quantity* of output, output with practical disregard of everything else, is of course primarily responsible for the defects in *quality*. In the USSR they speak of 'val'. 'Val' is an abbreviation from *valovaya produktsiya* (gross production), but it sounds like 'vali', which is equivalent to drive without regard to consequences. This may be the reason why the abbreviation is so widely used. The drive went on throughout the Stalin era, extending into the post-Stalin period. It is only quite recently that the talk of combating the evil of poor quality of machinery seems to be becoming more serious. As the reader may have noticed, the article of Vladzievski and Yakobson, which started the campaign for quality, was not published until June 1959.

The above evidence on durability and longevity of machinery indicates a great deal of irrationality and inefficiency, but this is not all. 'Val' in machinery production is apparently counted, at least largely, in the number of new complete machines turned out. In any case, whatever the reason, the enormous requirements for spare parts (enormous due to poor quality of the machines and especially of a large proportion of the spare parts, and to the use of inexperienced labour for repair work; there must also be a great deal of theft of small parts of the more usual kind such as nuts) are satisfied by the

factories producing the machinery only to the extent of 25-40%, according to Vladzievski and Yakobson (p. 37). The bulk of the parts has to be produced by the enterprises using the machinery, and this is frequently done inefficiently and 'normally' from inappropriate raw materials. The difficulties are greatest for precision parts. Moreover, 'the cost of the parts prepared in the repair shops of the enterprises are 4-8 times as high as in the original factories' (*ibid.* p. 37).[19]

These figures look impossibly high, but there is supporting evidence. The much higher cost of spare parts produced locally in small numbers and in a primitive manner is in any case beyond doubt. If it is assumed that half of the total repair costs consists of the cost of spare parts, if furthermore it is accepted that only 40% of the spare parts come from the factories producing the machines, and finally that the home-made spare parts cost twice as much to produce as the latter, the additional cost caused by the insufficient supply of spare parts from the factories producing the machines accounts for some 30% of the total repair costs. The figure is certainly large. Yet it does not take into account the costs due to the lower quality of home-made parts and, even more important, the fact that part of the cost of installing poor-quality parts is obviously wasted.

The very unhealthy situation in the USSR with regard to the quality of machinery and methods of repairing is seen strikingly in the evidence of Vladzievski and Yakobson that more than one-third of all the metal-cutting lathes available in the USSR in 1956 were used for repair work; in the USA this proportion was only half as large, according to the same authors.

The picture of Soviet machinery as given above seems not to fit at all with the great Soviet successes in conquering space. And yet both are facts. The picture of Soviet machinery as given above is the norm. The conquering of space and everything connected with it is a great exception. The Soviet economy abounds in such exceptions. Twenty-foot grain combines, a size larger than that found in any other part of the world, are used in the USSR side by side with the sickle, like that employed in Christ's time and even earlier.[20]

Professor David Granick gave the green light to this Soviet industry exactly a year before the great campaign started in the USSR for all-round improvement of the quality of the produced machinery and for repairing it at a reasonable cost. Professor Granick is not the only one who has been in this sort of awkward position. Alexander Yugow declared the Soviet monetary system healthy a few hours before the order became known that out of each ten rubles in circulation nine would be confiscated (effective 16 December 1947). Professor Alexander Baykov of Birmingham declared the Soviet crop statistics

('biological terms') to be as correct as those of other countries only a little time before this whole system was abolished because of its immense exaggerations.

Let it be noted in passing that poor quality is not confined to machinery. The poor quality of Soviet consumer goods is proverbial. The problem was discussed as recently as September 1960 in no less a place than *Kommunist*. No. 14 of this journal, p. 53, wrote: 'Life urgently demands that the enterprises raise their responsibility for the quality of goods released by them'. The editorial in *Pravda*, 9 April 1961, not only repeated those complaints, especially emphasizing the poor quality of all kinds of fabrics, and such items as television sets, etc., but gave a whole line of reasons for this phenomenon. Cotton contains too much dirt and water. Artificial fibres, dyes and other products supplied by the chemical to the textile industry are even poorer in quality. And finally the machinery used in the production of consumer goods is deficient in quality.

The first consequence of the poor quality of consumer goods is that the people are eating poor food[21] and are drably clothed. But the durability of the non-food goods also leaves much to be desired, and this means that more goods are required to cover the same need.

Timber

Lumbering is certainly an industry with a mass of inefficiencies including a large proportion of total procurements effected by very small, poorly equipped enterprises and the shipping of large amounts of green round timber over very long distances to be cut in the consumer areas, involving great waste. There is still more waste in the use of green timber in construction work, including railway sleepers. Lack of space however precludes a full discussion of these topics; let us only say that the long-distance shipping of round timber can easily be proved from official statistics; it is due both to disproportionate development of lumbering and sawing capacities in surplus areas and to erroneous price policies.[22]

A report in *Ekonomicheskaya gazeta* (21 February 1961) describing conditions in Eastern Siberia sets out the respective grievances in bold type. Round timber is shipped in great amounts to consuming areas over particularly long distances; the local sawing facilities are utilized only little (20%). As the reason, the faulty structure of prices and of the charges for transportation of round and sawn timber is given.

The fact that such round timber shipped over very long distances still finds consumers (these possibly are getting the timber by allocation) shows incidentally the confused state in which the market of this important building material is permanently found.

The cost of timber used in construction work is not much under one-half of the total cost of building materials used in the USSR; so the losses due to mismanagement in the timber industry run to quite a pretty penny.

Artificial versus Natural Fibres

Professor Campbell wrote in *Value and Plan* (pp. 80-81): 'It is impossible to specify concretely what wrong decisions have flowed, or will flow, from this cost-accounting error [failure to consider prospecting costs], but it seems highly likely that there will be such decisions. Consider, for example, two important areas of technological change that the Soviet planners have recently been discussing, namely, the changeover of the railroads to diesel fuel and the expansion of synthetic chemicals output on the basis of petroleum raw materials'.

Each of the cited examples misses the main point. On the second case Campbell elaborated (p. 81): 'There are cited wonderful cost advantages of plastics versus other kinds of materials, and the advantages of using petrochemical rather than agricultural raw materials as the basis for these products. This may well be a rational technological change, but it is easy to believe that calculations in individual instances will be confused because of a false notion of the cost of petroleum'.

In making this statement Professor Campbell thought only of prospecting costs as not being correctly reflected in the price of petroleum. He disregarded the important point that the turnover tax levied on fabrics made from artificial materials is considerably higher than on fabrics made from natural materials, and also the reason for this discrimination. Turetski writes on fabric prices: 'At the present time [sale] prices of fabrics are determined, as a rule, by the necessary expenditures on the output of fabrics from natural fibres, although the output of fabrics made from artificial fibres costs much less than that from natural fibres'.

After explaining that this method of pricing derives from the fact that the output of artificial fibre is still small, he continues: 'Hence the high [selling] price [relative to cost] of fabrics made from synthetic and artificial fibres and the large element of turnover tax in this price'.

Data on the fixed investment involved in the production of cord and automobile tyres from cotton and artificial fibres[23] show that the investment involved in manufacturing tyres made from kapron (including investment in the production of raw materials) is 14% less than in tyres made from cotton. If the greater service life of the former type is taken into account, the investment is only 51% compared with cotton.[24] Tyres made from cotton, incidentally, are virtually extinct in the United States (3.3%of total output in 1953).

As in several other cases, the irrationality lies not in the shift to artificial materials, but in the excessive delay in their development. Soviet production of artificial fibre in 1940 was 11,100 metric tons; the USA produced 219,000 tons in the same year. By 1955, Soviet output reached 110,500 tons, while the United States' output amounted to 645,000 tons. The demand for materials from artificial fibres was indeed fully satisfied in the United States by 1950, when output of fabrics from this fibre started to decline.[25] In 1959, 179,000 tons of artificial fibre were produced in the USSR, while 59,000 tons of such fibre were imported as well as 10,000 tons of yarn from such fibre.[26] Imports thus amounted to about 40% of output; it was indeed good business to import cheap artificial fibre while exporting the expensive cotton.

The seven-year plan target for artificial fibre is 666,000 tons.[27] This jump is certainly great, but it is by no means certain that even with this volume of production in 1965, if reached, the demand for fabrics from artificial fibre will be satisfied to such an extent that it will be possible to set the selling price (and specifically the rate of turnover tax) at the same ratio to production costs as for cotton fabrics.

It is hardly correct to explain the lag in the development of artificial fibre and other similar materials by the fact that the Soviets concentrated on the expansion of heavy industry so that there were no investment funds available for their development. This argument may be valid for flax and hemp, which fit badly into the Soviet form of agricultural organization, but do not require large State investments. But cotton needs large investments in irrigation installations as well as in factories producing commercial fertilizer and in transport facilities for the latter (the production of flax and hemp also calls for the provision and transport of fertilizer). The reason—at least the principal reason—for the great lag in the expansion of artificial fibre production was the freezing of thought and initiative, probably to a greater extent than can be expected from any other organization based on bureaucracy. It was the spirit of Stalin, surviving after his death, that was responsible for the fact that the USSR lags twenty years or more behind the United States in the production of artificial fibres.

One special factor supporting natural products, including natural fibres, at the expense of artificial products is deficient technique, which affects the artificial more than the natural product. In 1959 an all-Union conference of workers in the artificial fibres industries was held at Klin, not far from Moscow. According to *Ekonomicheskaya gazeta* (15 February 1961) 'much, very much was said there on the unsatisfactory quality of the fibres'. More than a year after the conference correspondents of the paper visited several factories to see

whether the defects revealed at the conference had been eliminated, but found little change.

The complaints on the poor quality of the artificial fibres, voiced as recently as 29 March 1961 in a long article in *Ekonomicheskaya gazeta*, are too numerous to be reproduced here. The article concludes with the recommendation that the quality of the produced fibres needs a special discussion by the planning organization and the State Committee on Chemistry. Incidentally, when knitted goods are produced from these defective fibres in factories, the needles of the factory 'KIM' must be used. The special article in *Ekonomicheskaya gazeta*, 28 March, devoted to the quality of these needles, concludes: 'Improvement of the quality of the needles and, consequently, the lengthening of their service at least 2-3 times . . . would eliminate hundreds of millions of rubles of losses by the factories of knitted goods, and assure a high quality of the produced stockings and socks'. Improbable as this seems to be, the rubles in the article should be the new rubles, ten times the value of the pre-1961 ruble.

Agriculture

We cannot here discuss the most atrocious case of irrational pricing, the low, practically nominal prices paid by the state for obligatory delivery of farm produce over a period of nearly thirty years, although the losses caused by this discrimination were certainly very large, particularly in unused or poorly used labour. This period ended only in June 1958 when reasonably high unified prices for kolkhoz deliveries along with kolkhoz ownership of farm machinery were introduced; but even after these reforms Soviet agriculture remains full of irrationalities and inefficiencies. Space permits discussion of only one item, which was chosen because it is one generally neglected by scholars.

In the USA the ratio of the price of pigs (live-weight) to that of corn (maize) was 7:1 in 1951-55. The ratio is not higher and is indeed lower in European countries with a large pork production, such as Denmark or West Germany. In the USSR, however, the ratio between the prices paid to kolkhozy by the State for pigs to the price for feed grains is 14:1 or even higher. The relationship between the prices of other animal products and those of feed grains is about the same as for pigs. It is even more curious that Soviet analysts insist that at the existing prices the production of animal products is unprofitable for the producers, or even involves them in loss. It is in any case less profitable than crop production. One cannot, indeed, detect a flood of animal products onto the market, which would certainly be the case if these Soviet calculations were wrong.

This 14:1 ratio is the result of an agglomeration of inefficiencies. There is, for example, an immense amount of waste of feeding stuffs (due to improper balance, irregularities in feeding, and so on). The work of I. A. Benediktov, the former Soviet Minister of Agriculture, on the economy of state farms, contains a wealth of material on this score.[28]

In a paper read in October 1957 at Münster in Westphalia Professor Arthur Hanau gave an interesting series of figures for West Germany, showing the gradual decline of the ratio between the prices of pigs and of feed grains, as the result of improved feeding methods and breeding over a long period. The figures are:

Time	*Ratio*
Before 1914	$7\frac{1}{2}$:1
About 1928	7:1
The 1930s	$6\frac{1}{2}$:1
The present or near future	6:1 or less

The socialist agriculture of the USSR will have to start the same descent from a level about twice as high. It has a long way to go to reach the ratio which prevailed in Germany before 1914. As things stand at present, Soviet agriculture must be recognized as immensely inefficient, at least in the branch of animal husbandry.

Construction

The discussion here must be limited to the excessive length of construction time. A small subsection in the section on electric power above (part I) deals with complaints over the long time taken to construct power plants. Starting the construction of more plants than can be completed in reasonable time is however a normal feature of the Soviet economy. It reached the proportions of a calamity in the early 1930s and again in the 1950s. The accumulation of an excessive number of incomplete construction projects in the early 1930s is discussed in this writer's *Soviet Industrialization, 1928-52*. So far as the accumulation in the 1950s is concerned, all that can be said here is that it probably started at the end of 1950, with the announcement of the five Great Stalin Constructions of Communism, and continued well into the post-Stalin time. The death of Stalin may indeed have intensified the phenomenon because the previous powerful balance provided by him and his secretariat against the ministries' power tilted the other way when he died: the ministries could force more projects into the investment plan than the plan as a whole was capable of implementing. Since primarily big projects were involved in this accumulation, the

effect of the failure to complete constructions already started did not reveal itself before 1955, and the full severity of the blockage was not manifested until 1956. The important slowdown of the rate of Soviet economic growth in 1956 and especially in 1957 and 1958 is directly traceable to this phenomenon.[29] The decline in the rate of industrial growth in 1956 to 1958 inclusive was indeed sufficiently marked to distinguish the growth in these years from that in, say, 1951 to 1955. (From 1950–5 to 1957 and 1958 the decline in the annual rate of growth of industrial production may have equalled 20% and was at least 15%.)

The accumulation of unfinished construction and the delay in their completion not only depressed the growth of capacities, but it also markedly raised construction costs. The size of the losses caused by slowness of construction in ferrous metallurgy calculated by Levin is difficult to believe, but on the other hand, writing in the journal of the Soviet Academy of Sciences, he would hardly have dared to exaggerate greatly. Comparing the estimate costs with the actual construction costs in four big metallurgical works (construction may have proceeded particularly slowly in these cases), he wrote:[30]

> The estimate costs per unit of output are several times lower than the accounted costs [that is, the actual expenditures], although the factual value of the constructions differs little from that of the estimates. The large differences between the estimate and factual costs per unit of output are caused by the fact that the estimate costs do not consider the factor 'time'.

It seems a wild idea, but still . . . do they calculate their construction indices on the basis of what the constructions have really cost, or are the calculations based on what the constructions *would* have cost if the costs were according to the approved norms or estimates? Prospecting costs do not appear in the cost of such products as oil but are borne by the treasury. By analogy, it must be considered not entirely impossible that excessive losses on constructions caused by delays are transferred from the accounts of the respective projects and entered in the budget under one of the huge lump sums shown in it.[30a]

Transport

Cross-haulage and excessively distant haulage are perennial complaints in the USSR. The most frequent specific complaints are shipments of steels from the Donbass to the Urals and shipments of the same material back from the Urals to the Donbass. Complaints were made also that Pechora coal is brought into the Volga region, although it is substantially cheaper for this area to get coal from the Donbass. A really odd thing is that the Amur plant is shipping its amazingly expensive steel for processing to rolled steel right across the great

Asian continent to the heart of the steel industry in the Urals, because its capacity to produce steel is greater than its capacity to roll it.[31] *Ekonomicheskaya gazeta*, the economic daily of the CC of the Party, has the following rhetorics in its editorial of 1 December 1960: 'Does it make any sense that unsawn timber is transported from Siberia to the Urals and European Russia where standard houses are made from it and then transported in the reverse direction to Central Asia, Kazakhstan, and even Siberia?' The editorial continues with a complaint that empty bottles are shipped over 6,000 miles from Smolensk in the west of European Russia to the Pacific Ocean.

While the losses from distant and cross hauls are estimated at 2 billion rubles (pre-1961 rubles throughout in this study, except when noted), it does seem, nevertheless, that such hauls are simply a particularly conspicuous inefficiency and are therefore much emphasized. Much less damage is done by them than by some other irrationalities and inefficiencies, not talked about or mentioned only in passing, as for example the problem of spare parts for machinery. Considerable irrationalities are involved, for example, in the composition of hauls by type of carrier.[31a] Irrationalities are great in the type of traction used on railways. Yet in the USSR they are not treated as such at all.

The USSR is insisting on the development of the old-time transport by river, which is declining elsewhere owing to the ever greater demand for speed, and which is particularly unsuitable in Russia owing to its prolonged winters. Although the share of river in total freight traffic is declining, the absolute quantities so shipped continue to grow rapidly (an increase of 85% in 1950–58 in terms of ton-kilometres).

The fostering of transport by river involves of course sizeable investments, which are largely borne by the treasury. The growth of river transport is attained partly by special regulations, but a more important reason may be the subsidies in the form of disproportionately low rates. While railway transport yields a great profit, the average rates charged on river transport involve a loss of almost 25% of the costs.[32]

The White Sea-Baltic, Moscow-Volga, and Volga-Don canals were constructed by the NKVD for the glorification of the regime and it would be a sacrilege to look for rationality in these investments. To appraise the loss involved would be impossible even if the construction costs were known, which they are not. As shown above, there is a direct loss on each ton-kilometre effected. But even the amount of work performed by these canals is small, as data in *Transport i svyaz SSSR* (1957) and other official sources show.

It is an interesting detail that in projects serving both hydro-electric power and transport on rivers, the investment in hydro-electric

power is artificially lessened in the USSR by shifting a disproportionately large share of combined investment costs to river transportation,[33] borne by the treasury.

More modern means of transportation, such as transport by pipe line, were almost entirely (petroleum) or entirely (gas) neglected for years. Transport of petroleum by pipe line, which is much cheaper than that by railway, increased less in 1940–52 than total transport (68% as against 80%). The share of such transport, almost negligible prewar (0.8% of the total shipments in ton-kilometres in 1940), declined to 0.7% in 1952. The change in this area is very recent. The share of transport of petroleum by pipe line in total freight transport reached 2.4% in 1959 and is expected to be 7.2–7.4% in 1965, another case of breakneck speed in doing what should have been done many years ago.

Construction of pipe lines for the transport of gas (without which utilization of this cheap fuel is virtually impossible) is only starting and the 1959 statistical handbook (which is the last available) still does not contain any evidence on this score.

Electrification of railways. In spite of particularly unfavourable conditions for steam traction (very expensive coal)[34] it was almost monopolizing traction on Soviet railways until quite recently and is still dominating it. In 1956 not less than 82.8% of all freight was transported by steam locomotives, although in the United States the decline in the use of steam locomotives started already by 1930. As the data in Table 4 show, the output of steam locomotives was still very large in the USSR until 1956 inclusive. Then, the very next year, it was abruptly discontinued entirely. It may be argued with considerable justification that steam traction should have been given up much earlier. The inferiority of steam traction in Russian conditions is so obvious that there is little point in spending much space on it.[35] Dogmatic considerations are involved in the choice between electric and diesel traction, the two types of traction adopted to replace steam traction. This gives particular interest to the choice. The discussion will therefore be almost entirely limited to this part of the problem.

As everybody in the USSR knows, 'Communism is Soviet power plus electrification of the whole country' and the nearest thing and the best for propaganda would be to electrify all traction on railways. This idea dates back to the Plan GOELRO (1920); it is indeed an important part of the latter, and the Soviets never departed from this philosophy. While the seven-year plan foresees a much greater expansion of diesel than electric traction, the rulers refuse to spell this fact out and continue to pretend that electric traction is the choice thing.

Since as far back as 1920, each perspective plan provided for a large mileage of railways to be electrified. Only lack of investment

funds, or of investment funds and the necessary equipment, were until recently preventing fulfilment of at least a large part of the targets.[36] The defunct Directives on the sixth five-year plan also had a large target for electrification of railways—8,100 kilometres[37] but, significantly, the target was almost fulfilled (5,200 kilometres were electrified in 1956 to 1959 inclusive). The same mentality, but ever greater economic power! The seven-year plan foresees a further electrification of not less than 19,000 kilometres. What change has occurred recently in the attitude toward traction on railways has been in the first place that toward steam traction. The change in the attitude towards diesel traction has merely been a derivative of it.

Already in 1918, V. I. Grinevetski, an outstanding scholar, well known in Russia, advocated in his book *Problemy teplovoza i evo role dlya Rossii* (The problem of the Diesel locomotive and its role for Russia) the conversion of half the railway track to diesel traction, noting the considerable savings which would accrue from this. But the possibility of using diesel locomotives was ignored for more than 20 years,[38] although the obstacle of greater investment did not exist in this case. The attitude was: if not electric then the old steam traction.

There was on the surface a certain change in this attitude in the Stalin postwar years. As Table 4 shows, by 1950 the output of diesel locomotives was almost at the level of that of electric locomotives, but the latter averaged more than 50% more power per unit (*Promyshlennost SSSR* (1957) p. 220). Furthermore the situation in the early 1950s was actually such that as much track was converted to electric traction as possible, while in recognition of contemporary trends some track was converted to diesel traction. The change was not in the attitude to the diesel locomotive. It was simply that the steam locomotive had become a little less bearable. Still, only 3.7% of all locomotives were diesel-powered at the beginning of 1958.[39] It was a minor matter but worth noting that when, owing to the Korean war, it was felt necessary to curtail the output of locomotives, the output of diesel and steam locomotives was reduced while that of electric locomotives was maintained (Table 4).

The same attitude toward the diesel locomotive is observed in the Directives on the sixth five-year plan and in the seven-year plan, with the difference that the urgent necessity to get rid of the steam locomotives was increasingly realized. The Directives on the sixth five-year plan after providing for a large amount of electrification scheduled about the same amount of additional diesel traction, but the target for the latter was exceeded. The actual performers were more sensible than those at the top.

In the preparation of the seven-year plan it was felt that steam

TABLE 4

OUTPUT OF LOCOMOTIVES OF DIFFERENT KINDS IN 1950–60

Year	*Steam*	*Electric*	*Diesel*
1950	985	102	125
1951	665	113	76
1952	254	110	75
1953	668	147	101
1954	758	158	120
1955	654	194	134
1956	490	216	161
1957	discontinued	270	400
1958	—	344	712
1959	—	435	1,002
1960 (9 months)	—	317	958

Sources: *Promyshlennost SSSR* (1957) p. 220, *Narodnoye khozyaistvo v 1959 godu* p. 215, *Pravda* 14.x.60.

traction needed to be virtually disposed of during the period. After setting as high a target for electrification of traction on the railways (about 19,000 km.) as was believed possible, there still remained the huge amount of about 65,000 km. to be converted to some power other than electric and this of necessity was to be diesel power. In this roundabout way did the diesel locomotive come to be the principal type of locomotive in the seven-year plan.

But this role for it is never explicitly stated. Even now in the face of the dominant role of the diesel locomotive in the seven-year plan, it would be sacrilege in the USSR in talking of traction on railways or changes in it to say 'diesel and electric traction'. It must be 'electric and diesel traction'.[40]

Such comparison of the cost of traction on railways as had been made until recently has probably been not between electric and diesel traction but exclusively between electric and steam traction, with results quite different for electric power than would have been the case in a comparison with diesel traction. With no interest charge on investment, the comparison so made must in most cases have turned out even very favourable for electric traction. But it is most probable that no serious calculations have been made until quite recently. Electrification of railways was accepted as a commandment. The moment the attitude of the rulers was relaxed a little, the cat jumped out of the bag.

As is obvious from the preface of the Director of the Institute of Complex Transport Problems, USSR Academy of Sciences, Mikheyev's volume was prepared with the participation of a large number of staff members of the Institute and must be considered as highly authoritative. It shows that the total investment in railway traction including

that in the industries supplying the fuel is much greater in electric than diesel or steam traction, with the investment in diesel traction being the lowest. In the specific case for which details are given by the source and considered typical by the authors (gradient=9/1000 and load=10 million ton-kilometres per kilometre per year), the capital costs for a railway 1,500 kilometres long were calculated as follows:[41]

	Locomotive	*Million rubles*
Electric	H-8	1,068
Diesel	TE-3 (two sections)	518
Steam	FD	596

The excess in investment in electric traction as compared with the other two types of traction goes down with the increase in density of traffic and of the gradient, but diesel traction retains its advantage in investment as compared with electric traction under any conditions (Mikheyev, p. 190).

Mikheyev's calculations of operating costs involved in traction with locomotives of different type, are not usable without substantial adjustments. Not only is interest on the large additional investment in electric traction not considered, but the price of electricity (9 kopeks per kwh) is below its correctly calculated cost, while the price of diesel fuel (250 rubles per ton in terms of fuel of 7,000 calories per kilogramme) not only yields a profit, but includes a very high turnover tax. The discrepancy between the prices of electric power and diesel fuel is so absurdly great in Mikheyev's calculations, formally correct, that the expenditures on diesel fuel are set higher than those on electric power, in spite of the high coefficient of efficiency of the diesel engine and the expenses connected with conversion of the diesel fuel into electric power in the diesel locomotives (see, for example, Mikheyev, p. 172).

In spite of the great discrimination against diesel traction in Mikheyev's calculations of operating costs dependent on the type of traction, they turned out 17% higher for electric than for diesel traction at a load of 5 million ton-km. per km. per year and a gradient of 9/1000; the operating costs of electric traction are lower by only 5% for a load of 10 million ton-km. and the same gradient. At a gradient of 6/1000, which occurs frequently, the costs are lower for the diesel also with a load of 10 million ton-km. per km. per year. (Mikheyev, pp. 172-6). In addition to all the enumerated general factors which artificially favour electric traction, we find that the electric locomotive H-8 for which Mikheyev's calculations were made is considerably more powerful than the diesel locomotive TE-3 (2 sections) used by him. The latter is also wanting in quality, as will be shown later.

In another part of Mikheyev's book (p. 275) are given the actual costs of traction in 1956 on a number of railways (with one exception the railways are not the same) for the different types of traction. The average costs of diesel and electric traction turned out practically the same in this calculation. Exactly the same costs have been incurred on the only railway (Omsk) which was using both diesel and electric traction. The major factors artificially favouring electric power obviously operated in those factual accounts also.

There is no doubt that a really correct calculation of operating costs, which considers interest on the investment and uses a price relationship between diesel fuel and electric power reasonable for Russian conditions would show a substantial advantage in operating costs for the diesel as compared to the electric locomotive, except possibly in very exceptional conditions (both very great load and very steep gradient).

It is hardly necessary to mention that every steam engine produced for the railways in the USSR after World War II, and in fact after a much earlier date (and their output was very large in these years and all through 1956 as Table 4 shows) was a great misinvestment. A considerable amount of the railway electrification that was done was likewise a misinvestment, although a much smaller one, because most electrified lines are over reasonably level ground.

It would seem obvious that with the production costs of crude petroleum and consequently diesel oil as low as they are in the Volga-Urals area (see the section on fuel in the first instalment of this Note), *the diesel is the proper source of traction on Soviet railways*, if the problem is to be decided from the point of view of rationality rather than of communist religion.

It is worth noting that in tractor construction, where the slogan 'Electrification plus Soviet power . . .' played a very small role (the electric plough of the Plan GOELRO was a dead duck right from its birth), the great advantages of the diesel motor (in this case as compared with another internal-combustion engine) were recognized much earlier, although in this case too, there was a lag as compared with Germany of nearly 20 years.

Only when the output of diesel locomotives was already very large did they awaken to the fact of their unsatisfactory quality, and decisions were passed aiming toward their improvement by 1960. An article in *Ekonomicheskaya gazeta* of 4 April 1961 complains that the decisions were far from having been fulfilled. The TE-3 is the principal diesel locomotive produced and used in the USSR. In January 1961, a special conference of 12 railways took place to establish the defects of this locomotive and to recommend measures toward their elimination. In pursuit of this the Conference suggested 'more than 50 serious

measures and a further more than 200 smaller ones'. The article concluded with an appeal to the producers of diesel locomotives, members of various sovnarkhozy, the State Committee on Automation and Machine Building, the USSR, RSFSR and Ukraine Gosplans, which starts with the words: 'Worrying, very worrying . . .'.

The United States, with conditions for the operation of railways very similar to those of the USSR, also knew an electro-locomotive rush. But the highest point their numbers reached was little more than 2% of the total number of locomotives in service. And the rush was practically over by 1935, a quarter of a century ago. The further increase from 1935 until 1940 was equal to less than 2%. After 1940 a decline started, which is still in progress. In 1953 only one new electric locomotive was put in service on American railways, while 64 or almost 10% of the total were discarded.

The diesel locomotive made its move in the USA only after the top was about reached by the electric locomotive. But already in 1945 the number of diesel locomotives was about 5 times that of the electric locomotives. In very recent years diesel traction has become practically the only one in use in the USA. In 1958, of a total of 31,616 locomotives in service, 29,505 were diesel locomotives, 562 electric locomotives and 1,488 steam locomotives, and, judging by the small consumption of coal and fuel oil by the railways, and other evidence, each steam locomotive was used but very little, on the average.

All this of course was in full contrast to the Soviet situation. In the USSR they tried vociferously and still do, although not so loudly, to argue that the great density of the traffic on Soviet railways greatly favours electric traction and is indeed decisive for it (actually this factor frequently only lowers the loss involved in the use of electric traction).[42] The fact is bypassed in silence in the USSR that coal is very cheap in the United States, both relative to the price of coal in the USSR and to the price of diesel oil in the USA. The penetration of the diesel locomotive in the USA, early and rapid as it was, would have been even earlier and faster, if the price of coal had not been so low. Thus, in spite of the much lower price of diesel oil relative to coal at the well or mine than in the USA, the diesel locomotive started to be introduced in great numbers in the USSR more than 15 years later than in the USA. In 1958, the diesels as 3.7% of locomotives in the USSR were confronted with their proportion as more than 90% of the total number of locomotives in the USA. On the basis of the seven-year plan only about half of this lag will be worked down. And of course the doubtful advantage of the USSR in the use of the electric locomotive will be growing fast. According to the same plan the USSR is scheduled to produce, possibly already in 1961, as many electric

locomotives, or more, in one year, as the total of them in use in the USA.[43]

It seems there is a lack of imagination on this point. The diesel locomotive is an electric locomotive with the electric power produced by the diesel engine mounted on the locomotive itself. Why not call it an electric diesel locomotive?—which would enable both the Lenin dogma about electrification to be preserved and the USSR to have the locomotives economically most suited to its conditions.[44]

Planning

The claim is: Soviet economy is developing smoothly according to plan. Absence of smoothness is dealt with in detail by the present author in *Soviet Industrialization, 1928-52*. Planning is likewise handled elsewhere; specifically, perspective planning is discussed in some detail in a collection of essays released in book form about simultaneously with this Note. A few words on planning must still be said also here.

Since the early 1920s, i.e. from almost the beginning of planning, the Soviet operated on the idea that planning needs to consist of a system of plans: a general plan of 10-15 years' duration, five-year plans and annual plans. The general plan was to be the basis, with the five-year plans as segments of the general plan and the annual plans as segments of the five-year plans.

After more than 30 years they have so far only succeeded in producing in the way of long-range planning the targets for 11 industrial commodities for 1958-72. The targets, announced in November 1957, were dead a little more than a year later, when the diverging targets of the seven-year plan were approved early in 1959. Simultaneously and on similar grounds died the long-range plans for electric power and for traction on railways, approved in 1955 and 1956 respectively.

Five-year plans were released with delays of up to three years and more between the terminal year of the Directives on the fifth five-year plan in 1955 and the approval of the seven-year plan early in 1959. The targets of the five-year plans were frequently exaggerated, especially in periods unfavourable for the Soviets; they greatly suffered, furthermore, from rigidity and had other important defects. The five-year plans proper, i.e. not including the seven-year plan, in their total never operated in the true sense of the word, serving mainly for propaganda.

Thus the Soviet economy was restricted to having as a guide mainly the annual plans. Many targets of the annual plans were more or less realistic except for years unfavourable for the Soviets. But there were many other defects in them. The plans for individual years were completely unconnected with the plans for the next year as well as

almost completely with the five-year plans. Planning mainly on an annual basis is not enough for efficient operation of the largely state-owned or state-directed Soviet economy, even if the plans were good as they were not.

Many, too many, decisions of a planning nature were either not in the regular plans and were not passed through the regular channels (Gosplan USSR and the local gosplans) or were incorporated by the regular planning agencies in their regular plans only after they had been worked out and approved somewhere else. The Five Stalin Constructions of Communism, presumably worked out by the NKVD and approved directly in Stalin's secretariat, are only the most pronounced such case. Believing himself a great expert in agriculture, Khrushchev forces his opinions on such technical questions as selection of crops to be grown, on all producers. In many cases it remains unknown who actually worked out the targets. It may be correct to assume that the worst decisions were among those side-products.

The great defects of planning by whomever the decisions were made are permeating the whole economy and, therefore, also the analysis in this Note. The development of coal, while petroleum and gas needed to be developed; the development of hydro-electric power at enormous costs; the great preference for electric traction on railways instead of the more profitable diesel traction; the starting of excessive numbers of constructions etc.—all this and much more than this was in the plans, and all this does not recommend them.

To round up the picture, the reader may be referred to the article by P. Filipov 'On Improving the Planning of Depreciation Rates' in *Planovoye khozyaistvo* 1960 no. 11. I would not have dared to assume that after dozens of years of planning the calculation of depreciation could be in such a chaotic state. According to this source (p. 39), on the basis of the average depreciation rate charged in the coal industry in 1949-58, the average life of the capital assets of this industry (i.e. in the first place, of the mines) is equal to 70 years. The author cites numerous cases where nothing at all was set aside for depreciation, the whole allocation for this purpose being devoted to capital repairs.

The first step for improvement of planning was in the decision of the plenary session of December 1956, which proclaimed that plans must be realistic. The middle-range plans are gaining from this change most. Specifically the measure opened the door for establishment of closer connection between the five-year plans and annual plans. With planning on a higher level, it became also possible to think of making the plans, especially the long- and medium-range plans, elastic—a requirement which should be considered basic for plans and planning. After a step in the wrong direction in 1958-9, a sensible

attempt to establish both elasticity of plans and close contact between the five-year plans and annual plans was made by the order of the USSR Council of Ministers of December 1960, the idea of elasticity having been taken over from the practice of American corporations. Rigid planning would of course be impossible in private enterprises, which cannot afford to be irrational.

This order provided that beginning with 1962 the annual plans must include targets for the major items in the fifth year after the plan year, i.e. for 1966 in the case of the 1962 plan. Should this measure be successfully established, it will be a decidedly higher level of planning than what was happening in the preceding 40 years.

The measures to improve planning which have been undertaken since May 1955 are treated in an article to appear in *International Affairs*, Oct. 1961.

Conclusion

We have discussed by no means all the principal cases of inefficiency and irrationality; whole sectors, such as distribution, have remained unmentioned. While retail trade, and especially public catering, leave much to be desired, the distribution of capital goods and implements by the bureaucratic method of allocation is a cause for continual complaint; perpetual changes in the method leave the need for further change almost as large as before. The few exceptions to the principle of allocation only go to show up the defects of the system.

Since 1958 allocation of farm machinery to the MTS has been replaced by kolkhoz purchase from the MTS and RTS. Quite a few models of machines at once became unsaleable. It also turned out at once that the relationships between prices of different models of tractors and other farm machinery were not such as to ensure sales of all of them. In 1961 the distribution of machinery on the principle of consumer's choice has been extended to the state farms. An editorial in *Voprosy ekonomiki* (1961 no. 2 p. 8) states on this subject: 'These orders [i.e. by state and collective farms] will induce the factories . . . to discontinue more rapidly the production of obsolete machines and to replace them by more modern ones'. Obviously, under a system of allocation, factories cheerfully went on turning out obsolete models.

Great disproportions are a special manifestation of inefficiency and irrationality in the Soviet economy; for thirty years the whole economy was in fact one huge disproportion. Heavy industry was fostered, while in varying degree everything else was disregarded, the neglect of agriculture having been only an extreme case of this. But disproportions can be noted also within heavy industry; one can note disproportions between branches and within individual industries,

e.g. between the output of iron ore and that of pig iron, or between the outputs of pig iron, steel ingots and rolled steel.

Some of the specific cases of disproportion which have emerged in the foregoing discussion may be recapitulated:

(a) greatly excessive development of the expensive hydro-electric power, leading to inadequate total production of electric power and the existence of a mass of small electric-power plants with very high production costs;

(b) inadequate development of refining facilities for the Volga-Urals petroleum, leading to a marked deterioration in the quality of petroleum products, especially diesel oil;

(c) factory-made spare parts for all types of machinery falling gravely short of requirements, so that the users have to produce these parts themselves from unsuitable materials, with inadequate workmanship and at very high cost, thus increasing the cost of repairs by 30% or more;

(d) inadequate development of saw-milling in forest areas, leading to long hauls of round timber, almost half of which goes to waste when sawn; inadequate drying facilities for sawn timber.

A disproportion exists, furthermore, between the output of large-scale industry and the demand for the goods produced by it. The local state and cooperative industries which have to supplement the output of industry are very expensive producers, especially the cooperative industries. *Kommunist*, 1960 no. 14 p. 60, writes: 'Labour productivity in cooperative industry is much lower than in the enterprises of local [state] industry and even more as compared with that of the sovnarkhozy [centralized state industry]'. Complaints of poor quality of the goods produced by the local industries are proverbial. While it seems impossible to calculate the losses in labour and production costs as well as in the inconvenience and loss for the consumers resulting from the above arrangements, all of them are certainly substantial.

There are some advantages of the small scale industries in that some such enterprises are using local materials as well as residuals of materials from large state enterprises and machinery discarded by these enterprises. But the gains are unlikely to compensate for more than a small part of the losses.[45]

A characteristic phenomenon associated with the freezing of thought and consequent irrationality is that of 'skyrocketing', output of this or that product having increased, or being about to increase, x-fold in almost no time, where x is always a large, occasionally even an astronomical figure. While these skyrocketings are proclaimed

enthusiastically, the reader is not expected to reflect that the target level of output might well have been reached much earlier, and that if the development had been started at the proper time, it could have proceeded in a less spectacular, but healthier—and cheaper—manner. The very fact of the frequent 'skyrocketing' is evidence of irrationalities and inefficiencies stretching back many years or even decades. As to the cost, development at breakneck speed is frequently associated with errors in the choice of sites and equipment and with other losses not incurred in systematic development.

We can mention only a few of the innumerable cases of 'skyrocketing' in output or construction; the most important examples at the present time seem to be the provision of the seven-year plan that gas output is to increase seventeenfold in ten years (1955-65). Output of diesel locomotives jumped more than 6½ times in five years (1955-1960); and four and a half times as many row-crop tractors were produced in 1958 as in 1953. One may note that the output of diesel motors alone increased thirteenfold between 1940 and 1950.

The decision of the plenary session of the CC (6-7 May 1958) on the chemical industry provided for the following increases in seven years:

fabrics of artificial fibre mixed with cotton	6 times
knitwear (outer- and underwear) of the same materials	9 times
artificial *karakul* (Persian lambskin)	14 times
microporous soles	40 times

The seven-year plan further prescribes that the negligible 1958 output of paperboard (for boxes)—70,000 tons—shall be raised to 1.5 million tons in the same seven years.[46] The output of chipboard is to rise from 30,000 tons in 1958 to 3.5 million tons in 1965, i.e. 117 times.[47]

When I first came across the fortyfold increase in microporous soles, I thought 'they seem to have discovered yet another panacea which can be attained only under communism'. Upon (very short) investigation I found that the soles of my sandals—purchased in 1954 in Switzerland—with which I was particularly happy owing to their lightness and virtual indestructibility, were of this very kind. As in many other cases, a useful development was neglected for years, so that breakneck speed was later necessary in order to make up for the delay. Since output of this material was negligible in 1958, a sensible output of it in 1965 implies the stupendous fortyfold rise in seven years.

In general, only such cases of delayed development are cited where an obvious, and frequently very large, loss is involved and yet shortage of investment funds was not a factor. The only reason that can be

found in most of these cases is a false philosophy, a mental paralysis, deliberate refusal to look at modern technical developments. It was not shortage of capital which led to the emphasis on hydro-electric power, or to the delays in the development of petroleum and especially gas, or to delay in the shift to diesel traction on the railways, or to delay in the production of artificial fibres; the most important of these shifts are actually releasing large investment funds. The Soviets continued to invest heavily in coal rather than petroleum and gas, although the additional investment in the latter—including prospecting costs—would have been repaid in twelve to eighteen months; they went on producing steam locomotives and fabrics from natural fibres, although less investment was involved in the production of diesels and artificial fibre, and operating or production costs would have been substantially reduced. The release of investment funds was particularly large in the shift from hydro-electric to thermal power stations.[48]

Manifold reasons led to the various lags; there was the attempt to operate the Soviet economy on *soi-disant* Marxist principles, although, as Peter Wiles has correctly remarked, 'There is no Marxist micro-economics'. Marxism is, moreover, greatly misinterpreted and misdeveloped under the conditions of the dictatorial and super-centralized Stalin regime and still dictatorial and still super-centralized regime of Khrushchev. Lenin's enchantment with electrification of railways may have cooled in a few years, but he died, and 36 years after his death the diesel locomotive is still inferior to the electric locomotive in communist thinking. Planning, which provides for almost everything in the USSR, operates poorly; and so does pricing, which is needed in very great detail in the 'socialist' state. Bureaucracy and even simple ignorance on the part of the decision makers themselves round out the picture.

One can but hope that the immense extent of the losses caused by irrationality and inefficiency emerges clearly from our analysis. The reader should bear in mind that the source for covering the losses is also immense. It is the underpayment of labour; a hundred million persons are toiling for rewards which, in the most modest reckoning, are a quarter or a third less than what they should be.

If everything connected with planning, including specifically investment policies, was entirely correct as long ago as 1932, all that was needed—in fact the only thing that could be done—was to proceed on the same lines in the future. The preceding discussion shows that it was not so; we cannot accurately measure its extent, but the existence of a great mass of irrationality and inefficiency in the Soviet economy is beyond doubt. Without going into the history of the problem, one may perhaps suggest that in this respect the last three years of Stalin's

rule were the worst years, except for the All-out Drive of the early thirties. The five Great Stalin Constructions of Communism announced in the second half of 1950 were probably by far the most wasteful construction projects, in terms of investment funds, of the whole Stalin era. With one major exception, the Directives on the fifth five-year plan accepted in 1952 (i.e. a few months before Stalin's death) were the worst piece of perspective planning in Soviet history.[49] The attention given to them was by far the smallest ever paid to a five-year plan in the USSR.[50] Hardly any other document pertaining to planning reflects the 'deep freeze' of thought and initiative to such an astounding degree as these Directives. All the irrationalities and inefficiencies discussed above existed during Stalin's last years and hardly anything was done in the Directives, or, for that matter, for years thereafter, to remedy the situation.

A thaw started soon after Stalin's death, which could be observed even in the field of economics, but in the latter it hardly extended to ability to think. The reduction of the retail prices of consumer goods (on 1 April 1953) included the absurdity of halving the prices of potatoes, fruit and vegetables—those goods which were in by far the shortest supply. It was correctly realized that further delay in raising the prices paid to the producers for farm products was not feasible (the need for the raising of farm prices must have been known long before Stalin's death) but the increase in prices was carried out in a manner that was not sensible. The Directives on the sixth five-year plan—which were ultimately discarded as unusable—were an improvement on those of the fifth plan mainly on the surface; thought and initiative in economic matters remained frozen.

It was only after the December 1956 Plenary Session of the Party CC that sensible decisions began to be taken, including measures against irrationalities and inefficiencies. The most important of these occurred in 1957 and 1958: the reorganization of industry and construction in 1957; the decisive shift from coal to petroleum and gas, which began to be implemented in that year; a substantial expansion in the chemical industry, including artificial fibres, begun in 1958; in the same year occurred the transfer of farm machinery from the MTS to the kolkhozy and the introduction of single prices for the produce delivered by kolkhozy to the state; and—the most important by virtue of its philosophical or 'theological' repercussions—the surrender on hydro-electric power in 1958. A more or less serious attempt to rationalize the wage-structure has been made since the end of 1956. There have also been significant large specialist conferences in 1957 and 1958: on the law of value and its utilization in the Soviet economy (May 1957); on statistical problems (June 1957); on the efficiency of

investment decisions, and on land rent (1958), to name only a few. Considered from the standpoint of modern economics, these do not represent a real liberation of thought though. The new splitting (early in 1960) of planning between two organizations—one for long and medium range plans and the other for the short range—and many other actions show that no complete break with the past is to be anticipated. But it was a long way from the deep freeze of Stalin's days, and it still is. And this means less irrationality and less inefficiency.

The writer gave a talk entitled 'Is the seven-year plan realistic?' in May 1959. His answer was 'fairly realistic'. All the changes enumerated above had already taken place, but they had perhaps not been sufficiently assessed and weighed. I now believe that, except for agriculture, the plan *is* realistic.

An important factor in reaching this decision involves labour productivity. If no great weight were put on the measures which tend to reduce irrationality and efficiency, a gradual decline in labour productivity since, say, the first half of the 1950s would be natural. This decline seems to have been prevented to date and may possibly be prevented for some time in the future, by the partial elimination of the kind of irrationalities which are so abundant in the Soviet system.

We have to stop. The subject covered by our title is almost inexhaustible; as we pointed out in the Introduction, its adequate coverage would need a large volume rather than a note, albeit an extensive one.

NAUM JASNY

Washington, D.C.

Addendum to Part I

Yu. Bokkerman of *Glavgaz* (Gas Centre) reports in *Ekonomicheskaya gazeta* 26 March 1961 on 'The Greatest in the Country, the Most Powerful in the World Gas Pipeline'. The pipe-line has to connect the gasfields in Gazli in the desert of Bukhara, Central Asia, with the Urals. In passing, the author mentions that Englishmen were drilling for gas in the area 'in former times' 'decades ago'. The Soviet power is starting to develop an enterprise which had already been in process of developing some 50 years ago. What immense rigidity! What astounding inefficiency! And after slumbering for half a century they come up with the claims of 'the greatest, the most powerful'.

The *Gidrorybproyekt*, an official planning organization involved in fishing, calculated the annual loss in fishing from the dams of the Volga (practically, Kuibyshev and Stalingrad) hydro-electric plants at 130,000 tons, at retail prices about 2 billion rubles (*Voprosy*

ekonomiki 1961 no. 3 p. 64). The named plants will produce some 25 billion kwh per year, when the Stalingrad plant is ready. The average cost of fuel used in thermal plants of the USSR was about 5 kopeks per kwh in 1958 (Avrukh, *op. cit.* p. 68), so the total cost of fuel to produce the 25 billion kwh would be 1.25 billion rubles. The loss in fishing is thus greater than the whole saving on fuel. All or most of the huge investment in the Kuibyshev and Stalingrad plants appears lost—due to this factor alone, completely neglected by the NKVD 'planners'. Both plants are claimed to be the greatest in the world. Surely, the greatest waste in the world.

Addendum to Part II

This (the second) instalment of the Note was already in an envelope when the writer came across a piece of information which he cannot restrain himself from reporting. The Soviet and also the Western Sovietological publications devote considerable attention to such a highbrow thing as the use of higher mathematics in Soviet planning. The current issue of *Planovoye khozyaistvo* (1961 no. 1 p. 18) contains in one-and-a-half lines the information that two-thirds of Moscow industrial enterprises do not have any direct connection with a railway. This of course implies that in choosing sites for enterprises no attention is given to the opportunity to load and unload direct into and from railway cars. (It should be remembered in this connection that road transport is poorly developed in the USSR. The operating cost of transportation by truck per ton-mile is more than 15 times that by railway.) Higher mathematics are not needed to calculate the additional costs. Elementary mathematics would suffice.

[1] Gardner Clark, *The Economics of Soviet Steel* (Harvard Univ. Press, 1956) pp. 159–60.

[2] Now that the mining of this ore has been started, the difficulty which was always recognized—that of combating underground water—is fully in evidence. Only a fraction of the 1960 plan was fulfilled, owing to this very obstacle.

[3] See *Voprosy ekonomiki* 1958 no. 2 p. 39.

[4] See his *Voprosy natsionalnovo dokhoda i finansov SSSR* (M.-L., 1958) p. 196.

[5] *Narodnoye khozyaistvo SSSR v* 1958 *g.*, pp. 191–2.

[6] *Promyshlennost SSSR* (1957) p. 113 gives the 1955 output of steel in the Far East as 250,400 tons. This must be the Amur plant.

[7] Gardner Clark, *op. cit.* p. 141.

[8] The term is suggested by the present writer; see especially his *Soviet Industrialization, 1928–52*, Chapters IV and V.

[9] See below on the DT-75, the successor to the DT-55 at the Kharkov factory. The defects of the DT-75, which are preventing its acceptance at the Stalingrad and Altai works, are apparently those which are already present in the DT-55. But the DT-55 has other faults also: 11.6% of the DT-54 tractors (a variant of the DT-55) produced by the Stalingrad tractor factory in 1959 were returned to the factory as defective. See *Ekonomicheskaya gazeta* 28.ix.60.

[10] The immense helplessness of the Soviet tractor industry was shown in 1952 when the Kirovets-35, which was much too heavy even for a caterpillar model, was simply put on wheels and thus converted into a wheel tractor, the Belarus. Some improvements in it were made in 1958. In spite of this, the Minsk tractor factory was criticized for the quality of its tractors at the plenary session of the CC of the Party in June 1958 (see *Traktory i selkhozmashiny* 1960 no. 10). Further

considerable improvements, including a reduction in the weight of the tractor, were claimed for the Belarus model, of which production was to start in 1961. See *Sovetskaya Belorussiya* 16.xii.60.

[11] As recently as December 1960 an analyst attempted to calculate the differential rent in Mogilev oblast, a territory extremely unadapted to large tractors, on the basis of the extent to which the DT-55 was adapted or unadapted to various micro-territories of the area. (See I. Kaklyak, 'On Differential Rent in Kolkhozy', *Voprosy ekonomiki* 1960 no. 12 pp. 104-10.) The idea did not occur to the author that each micro-territory should use the tractor suitable for its conditions (in some territories of Mogilev oblast the adapted 'tractor' may have four legs). According to Kaklyak the DT-55 performs in the area studied in many operations only as much work as would be appropriate for a tractor of half its size.

[12] Data from *Selskoye khozyaistvo SSSR* (1960) pp. 422-4.

[13] *Ekonomicheskaya gazeta* 8.xii.60.

[14] An extensive literature has been devoted to this subject in the recent two or three years. See *Traktory i selkhozmashiny* 1958 no. 11, but also *Promyshlenno-ekonomicheskaya gazeta* 16.xii.59. On the new cotton harvester, see interview with the director of Tashselmash Plant in Tashkent, Central Asia, in *Pravda vostoka* 12.i.60. The statistics show for the beginning of 1959 only 10,000 cotton harvesting machines in the whole USSR as against 25,000 in 1957 (*Selskoye khozyaistvo SSSR* (1960) p. 415). Most of the machines which disappeared from the statistics were those discarded as unusable.

[15] *Molot*, a provincial daily, 5.ii.60.

[16] See *Ekonomika selskovo khozyaistva* 1960 no. 12 p. 168.

[17] *Narodnoye khozyaistvo SSSR v* 1958 *g.*, p. 487.

[18] The discussion continues. *Ekonomicheskaya gazeta* 28.ix.60 contains, for example, an article with the subtitle: 'The Unpostponable Tasks in Improving Technical Control in Enterprises'. The improvement of control has as its aim the fight against defects in the machinery produced.

[19] The literature describing the tragic situation with regard to spare parts is almost endless. *Ekonomicheskaya gazeta* 3.xii.60 contains a correspondence from Kharkov under the self-explanatory title 'Onto the Long Road for . . . Nuts' (*V daleki put za . . . gaikami*).

[20] The high priorities to missiles, spaceships, etc. do not extend to medals handed over to the heroes of the flights. In the great celebration in the Kremlin on the occasion of Gagarin's flight into space, Brezhnev, the President, had difficulty in pinning the medals on Gagarin's breast, because the pins of the medals were blunt.

[21] The 137,500 establishments for public feeding in 1959 had a total of 49,199 appliances for cold storage by the end of the same year (*Narodnoye khozyaistvo v* 1959 *g.*, pp. 688 and 621-2) and a considerable amount of duplication seems to be involved in that figure.

This writer was really stunned over the information from Chita oblast, Eastern Siberia, that the slaughter-houses are not equipped with any type of refrigeration. The sheep are driven 300-400 miles to the slaughter-houses without being properly fed and have to wait there until natural freezing will make the slaughtering possible, and this again without being properly fed. The losses are said to be very heavy. See *Ekonomicheskaya gazeta* 9.ii.61.

[22] Sh. Ya Turetski, *Ocherki planovovo tsenoobrazovaniya v SSSR* (1959) p. 443.

[23] L. Krichevski and N. Fedorenko, 'The methods of determining the economic effectiveness of output and utilization of chemical products', *Planovoye khozyaistvo* 1960 no. 8.

[24] On the fourfold labour input in cotton yarn as compared with yarn from artificial fibre (including labour in producing the raw materials in each case) see *Voprosy ekonomiki* 1960 no. 1 p. 33.

[25] *Statistical Abstract of the United States* (1957) pp. 808-9.

[26] *Narodnoye khozyaistvo SSSR v* 1959 *g.*, pp. 721, 205.

[27] *Ibid.* p. 132.

[28] *Reserves of reducing production costs in Sovkhozy* (in Russian) (M., 1958).

[29] Most strikingly it is revealed in the fact that output of steel, which rose by 9.4% in 1955, grew only by 7.5% in 1956 and even only by 5% in 1957. It recovered to 7.2% in 1958. Not before 1959 was an anyway satisfactory rate of growth of steel (9.2%) reached again. Machinery, by far the most important industrial branch of the USSR, could not fail to be affected unfavourably by the shrinkage in the growth in output of its principal raw material. The table on pp. 560-1 of *Narodnoye khozyaistvo SSSR v* 1959 *g.* supplies data on the entry into operation of capacities for some important products and items in various periods. Comparison of such entries in 1946-50, 1951-5, 1952-8, 1956-9, and the entries scheduled for 1959-65, with the proper consideration that the capacities entering operation must rise with the growth in output, show very great declines in the entry of capacities in 1956-9, in the first place for rolled steel and spindles and looms in textile mills, but also for coal, pig iron, steel ingots, footwear, and even in the completion of railways.

[30] G. Levin, 'Capital Investments in Ferrous Metallurgy', *Voprosy ekonomiki* 1958 no. 2 p. 41.

[30a] Expenditures brought about by indefinite interruption of constructions are in any case borne by the treasury: see M. Z. Bor in *Problemy politicheskoi ekonomii sotsializma* (M., 1959), p. 105.

[31] 46,000 tons of steel were so shipped in 1959. About the same quantity was expected to be shipped in 1960. See *Ekonomicheskaya gazeta* 8.x.60.

[31a] The source which quotes the loss of 2 billion rubles from cross and too long hauls, also estimates at 1.5 billion rubles the loss arising from the use of large trucks for hauling small loads. See *Iz opyta raboty sovnarkhozov* (M., 1959), pp. 161 and 166.

[32] Cost of river transport to the transport organizations was 3.41 kopeks per ton-km. in 1956: see *Transport i svyaz SSSR* (1957) p. 24; subsidy, 0.8 kopeks per ton-km.: see G. M. Mayorski *et al.*, *Tariffs in River Transportation* (in Russian) (1959) p. 16.

[33] Avrukh, *ibid.* pp. 173-4.

[34] In 1957, steam locomotives on the Soviet railways utilized almost four times as many kilogrammes of fuel (in 7,000 calories per kilogramme) per thousand ton-km. as diesel locomotives (163 kilogrammes as against 43.6 kilogrammes). See A. P. Mikheyev *et al.*, *Effektivnost elektricheskoi i teplovoi tyagi na zheleznodorozhnom transporte* (Effectiveness of Electric and Diesel Traction on Railways) (USSR Academy of Sciences, M., 1960) p. 239. In physical terms the relation in fuel used is approximately as 10 to 1.

[35] Professor R. Campbell, discussing in *Value and Plan* (pp. 80-81) the effect of the fact that prospecting costs are not included in production costs and also in the wholesale prices of the goods involved, writes (as previously quoted): 'It is impossible to specify concretely what wrong decisions have flowed, or will flow, from this cost-accounting error, but it seems highly likely that there will be such wrong decisions. Consider, for example, two important areas of technological change that the Soviet planners have recently been discussing, namely, the changeover of the railroads to diesel fuel and . . .'. He would have reached different conclusions about this changeover if he had familiarized himself with the machinery involved. As will be shown, investment in diesel traction is actually somewhat smaller than in steam traction. The saving of fuel and on its cost is very large. In addition diesel traction permits some savings also on personnel, repairs, and many other items. Campbell would also have profited by having paid attention to the high turnover taxes on petroleum products, which alone are much more important than the depreciation charge and interest on the prospecting costs.

[36] The 'Plan GOELRO' prepared in 1920 insisted that electrification of railways had to start right away. A total of 3,850 km. were to be electrified 'in the first order' (Plan *GOELRO*, reissued 1955, p.213). All that was electrified from 1920 to 1932 was 60 km. *Second Five Year Plan*, I, p. 256, prescribed that 5,000 km. be newly electrified by 1937 'as against 3,600 km. with electric traction in the USA in 1931'. In the five-year period 1,540 km. were electrified. So it went. The Directives on the fifth five-year plan (*Pravda* 12.x.52) demanded a fourfold increase in electrified railways, i.e. the additional electrification of 4,500 km.: 2,400 km. were electrified in that five-year period. It will be noted, however, that the proportions by which the targets were missed, while remaining very large, were becoming smaller.

[37] *Planovoye khozyaistvo* 1956 no. 3 p. 50.

[38] *Promyshlennost SSSR*, 1957, p. 220 shows the production of one such locomotive in 1932, four and five in 1937 and 1940 respectively, and none in 1945.

[39] Mikheyev, *op. cit.* (footnote 34), p.21.

[40] See, e.g., the chart on p.491 of *Narodnoye khozyaistvo SSSR* v 1959 *g.*, which shows 'The share of electric and diesel traction in total freight traffic': in order not to admit the forthcoming dominant role of diesel traction the data for each kind of traction are not shown separately! Significantly, Mikheyev's book also deals (and is so titled) not with diesel and electric, but with electric and diesel traction.

[41] Mikheyev, *op. cit.* pp. 189 and 262.

[42] The average density of freight traffic in the USSR is almost three times that in the United States.

[43] Data for the USA from *Statistical Abstract of the United States*, and Interstate Commerce Commission, *Statistics of Railways in the United States* and *Transportation Statistics in the United States*, Part 1, various volumes.

[44] While on the question of dogma, the relative influence is worth noting of G. M. Krzhizhanovski and the great Grinevetski. The former was a poor engineer but Lenin's long-time adjutant. The advice of the latter, mentioned above, carried much less weight because he was a monarchist.

[45] From the report on the Fulfilment of the 1960 Plan it appears that the labour of the cooperative enterprises has been merged with state labour. Some fundamental reorganization of the industrial cooperative may well have occurred, but no details seem to have become known.

[46] *Planovoye khozyaistvo* 1960 no. 12 p. 35.

[47] *Ibid.* 1959 no. 11 p. 54.

[48] The Soviet Union produces only a fraction of the motor cars produced in the USA, and the seven-year plan intends the continuance of this policy. The lag in car output is not included among those cited above. Although many countries are now in a phase of rapid 'automobilization', the policy of producing only a limited number of passenger vehicles is considered

wise from a Soviet point of view, since the strength of the Soviet power is based on the population's low living standards and private cars fit in badly in such an atmosphere.

[49] The exception is the Party Directives on the Preparation of the Second Five-Year Plan, a piece of bacchanalian planning of the 'All-out Drive' period. These directives, which are hardly ever mentioned in the USSR, were accepted at the XVII Party Conference in January-February 1932. See on this interesting topic the essay on perspective planning in my collection *Essays on the Soviet Economy* already mentioned.

[50] The Directives were discussed and accepted by the XIX Party Congress in passing in a single day. The main task of the Congress was to glorify Stalin's 'work of genius', *The Economic Problems of Socialism.*

Additional Addendum to Part II. To be 10, 15, even 25 years behind more advanced countries in important features is bad. To be behind the level reached previously by Russia itself 45 and more years ago is certainly worse. Some 20% of Soviet agricultural production is from the plots of the kolkhoz peasants and workers with a labour productivity almost certainly not a little below that in the pre-revolutionary peasant farming. Now the country is in the period of 'extended construction of communism', and is reaching out to exceed all countries of the world in living standards. But thus far the socialized industry and the likewise socialized agriculture are not succeeding in producing consumer goods of the quality they had half a century ago. Soviet bread has the highest water content in the world, and certainly is not as good as that of 50 years ago. (The poor quality of fabrics produced by the socialized industry has already been mentioned: it is significant that it is far below that of the fabrics produced by the private industry of 50 and more years ago—those produced then in the Moscow area had even a particularly good reputation.)

The present Note, part II, was already in print when *Ekonomika selskovo khozyaistva* 1961 no. 3, containing the article 'What Hinders the Production of Durum and Strong Wheats?', arrived. I was aware that the situation concerning the quality of the grown wheat and the flour milling industry was, and is, bad; the mess described for Saratov oblast on the Volga by the author (who is the head of the oblast administration for agriculture) exceeds all assumptions.

Saratov oblast is adapted climatically and by its soil to grow hard red spring wheat (called 'strong' in the USSR) and durum wheat, not inferior to any in the world. In pre-revolutionary times the wheats of this oblast and the flour, farina, and semolina produced from them enjoyed a great reputation. Indeed the famous Canadian Manitoba was probably developed from a variety grown in the Volga area. The durum wheat of the Volga area and also of southern Russia was at that time kept separate from the common red wheat. But in 1959 only little over half the wheat acreage was in strong and durum wheats in Saratov oblast. Moreover, only a negligible proportion of these wheats passed the quality requirements as to grades. The rest of them was mixed in procurements with the other wheat. As a result, alimentary pastes, instead of being produced from semolina of durum wheat, as they should be, are produced from flour made of a mix which includes both durum wheat and common white wheat. The flour is the same as is used for bread making. In bread making this flour suffers from the great admixture of durum which, even if mixed in, must be tempered separately for the grinding process.

While the very small output of alimentary pastes in pre-revolutionary times (it has been immensely expanded since then) was on a primitive level, the present-day flour is greatly inferior to that of former times. To combat this deplorable situation, a premium of more than 50% for the delivery of durum and 'strong' wheats was introduced in 1960 (kolkhozy) and 1961 (sovkhozy). In the despised capitalist world the premiums for these wheats are equivalent to a few per cent. The Soviet system is this: no premiums at all for 40 years with the most deplorable results, and then suddenly vastly excessive premiums.

THE TERRITORIAL PATTERN OF INDUSTRIALIZATION IN THE USSR: A CASE STUDY IN LOCATION OF INDUSTRY

I

In recent years the development of Soviet industry in the Asian regions of the USSR has been of considerable interest to Western scholars. It has been the subject of many articles and of special chapters in handbooks on the Soviet economy. However, although the general policy concerning the creation of new industrial centres in the Soviet East was clearly delineated at the XVIII Party Congress (1939),[1] this fact was neglected by Western analysts in the subsequent period of 1939-50. In the postwar period two official Soviet publications engaged the particular interest of Western scholars: first the book by N. Voznesenski, at one time head of Gosplan and member of the Politburo, on the wartime economy of the USSR, published in 1947[2] and immediately translated into English in the West; and secondly a very detailed, semi-secret Economic Development Plan for the year 1941 which the Allies retrieved from the so-called Smolensk Archive captured by the German army during the initial battles on the Eastern Front in 1941.[3] It would probably be hard to find another Soviet publication quoted more frequently in Western works on the Soviet economy than the volume by Voznesenski. The Soviet Plan for 1941, quoted perhaps less frequently as its circulation was limited, is nevertheless considered by many scholars, especially Americans, to be an infallible authority on Soviet economic affairs. We do not wish to question the importance of these sources: Voznesenski's status in the planning and governmental machinery gave great weight to his published views, and the authenticity of the 1941 plan is undoubted. We wish, however, to point out that the data published in both volumes refer mostly to prewar years, and in some cases to the war period, and that they should not be too readily accepted as irrefutable authority on economic development in the Asian regions of the USSR in subsequent years, as some Western scholars have done. We have to realize not only that many secret data on the location and capacity of war industries were not included in any available Soviet publication, but also that during the following two five-year plan periods (1946-55), substantial alterations were made in these plans and that these alterations were not known in detail in the West.

The most frequently cited data on the economic growth of the Asian regions of the USSR are those showing the increase in total industrial output as compared with 1913. According to recent official

information, industrial output in the Kazakh SSR in 1956 was 36 times 1913, the output of the Kirgiz SSR 42 times, and that of the Tadzhik SSR 27 times the amount of 1913.[4] In discussing the situation during World War II, Soviet sources like to repeat that in 1941-44, 2,250 new large industrial plants were built in the eastern regions of the USSR, with investments running to 36.6 milliard (thousand million) rubles (at their then value). Industrial output in those regions was 2.9 times higher in 1943 than in 1940. In 1942-44 new power stations were built in the East with a total capacity of 3.4 million kw.[5] The increase in capacity of the power supply system was 81.6% in 1945 as compared with 1940, and the increase in actual production of electric power was 96.6% during the same period. The continuous repetition of the above data (which originate mainly from Voznesenski's report) contributed to a considerable extent to the incorrect theories prevailing in the West which attribute the economic growth in the Asian regions to developments during World War II. However, on comparison of the production of basic goods in the Asian and the European areas of the USSR during the period prior to World War II, the significance which the Asian regions then already had is readily seen, as the following table shows:[6]

	1913		1940	
	Asian regions (east) % of total	*European regions (west) % of total*	*Asian regions (east) % of total*	*European regions (west) % of total*
Coal	11.9	88.1	38.0	62.0
Oil	2.0	97.4	11.6	88.4
Pig Iron	21.4	78.6	28.2	71.8
Steel	20.8	79.2	32.8	67.2
Electricity	10.3	89.7	22.3	77.7

Below are more detailed data on the increase in power supply:

	Capacity of power stations			*Production of electricity*		
	1932 *in % of* 1928	1937 *in % of* 1932	1940 *in % of* 1937	1932 *in % of* 1928	1937 *in % of* 1932	1940 *in % of* 1937
Asian regions	341.8	260.3	141.5	389.9	389.0	149.3
European part and Transcaucasia	246.2	160.9	134.2	258.1	248.1	129.6

As is shown in the above tables, the rate of increase in power supply during the three prewar five-year plans was higher in the East than in

the European regions, which means that industrial progress behind the Ural mountains from 1928 to 1940 served as a basis for the more spectacular development which took place 1941-45. It should be noted that, although the figures reflecting the volume of production in the eastern regions climbed again during 1945-55, the ratio of increase was less than in 1928-40 (see table).

	Capacity of power stations			*Production of electricity*		
	1950 *in* % *of* 1945	1955 *in* % *of* 1950	1955 *in* % *of* 1945	1950 *in* % *of* 1945	1955 *in* % *of* 1950	1955 *in* % *of* 1945
Eastern regions	165.7	189.1	275.5	165.7	182.8	313.8
Western regions	199.1	190.2	378.8	253.0	189.3	431.8

We notice that during the years 1945-55 the situation in power supply was opposite to that of 1928-40; in 1945-55 the increase ratio was considerably greater in the European part, a fact which seems to escape the attention of many students of the Soviet economy. Furthermore, some Western scholars are fascinated by the unusual scope and size of some of the Soviet Asian projects. They fail to notice certain processes which indicate that the Soviet planners are in fact focusing their attention on other areas of the USSR which, as the following analysis will show, are of extreme importance and value to Moscow and consequently are given priority in actual economic planning. Unfortunately, some studies published recently in the West on this subject are misleading. For example, A. Lebed in his article on the development in the Amur Basin[7] overrates the project to build a new industrial centre close by the power stations to be erected on the banks of the River Amur in Siberia. We agree that the project will, when executed, be of enormous economic importance to the adjoining areas of both the USSR and China; however, this project still exists only in vague outlines which have not yet even been sufficiently discussed by Soviet academic authorities. The preparatory work is to be completed in 1960, but there is no information as to when completion of the project itself is expected, nor are there any data on the capacity of the plants to be built. Small items of a rather popular and descriptive character scattered in the Soviet daily press are scarcely to be regarded as trustworthy sources. In his overvaluation of Siberian projects, A. Polezhayev outdoes A. Lebed in conjuring up pictures of magnificent new iron and steel centres.[8] Of all the projects of the so-called 'Third Soviet Ferrous Metallurgical Base', only the Karaganda Iron and Steel Plant seems to be sufficiently advanced to start production early in the sixties.[9]

To what extent the Western reader may be misguided by premature announcements in the Soviet press is shown by the Irkutsk example. Various papers and studies lauding the planned promotion of industrial development in the Irkutsk area were published not only in the fifties but as early as the forties and even the thirties. Therefore, it was a genuine surprise to many when news reached the West that the proposed large hydro-electric power station at Irkutsk would not have enough customers to consume its output. The first 160,000 kw unit (of the four planned) which was expected to be in operation in 1958 would not be able to find customers for more than 50,000 kw. The project to extend the Gornaya Shoriya and Abakan iron ore mines which are supposed to supply the Second Western Siberian Iron and Steel Mills with iron ore is severely handicapped for geological and engineering reasons.[10] Recent investigations in the areas mentioned have shown a rather low percentage of metal in the iron ore deposits, which calls for expensive and extensive treatment of the ores. Moreover the enrichment of the Abakan ores is not being done for the benefit of potential customers of the Second Siberian Metallurgical Centre, but is necessitated by the requirements of the present consumers, the Kuznets Basin plants. Indeed, a new ore enrichment plant was put in operation in March 1958.[11]

Considering the geographic, demographic, industrial and—last but not least—the climatic conditions in the Asian part of the USSR, we find that the large power stations there (Bratsk, Irkutsk, Bukhtarma, admittedly under construction) can operate successfully and economically only when interconnected by a modern high voltage net. However, as late as 1955 (large new power stations in operation at that time were Novosibirsk, Krasnoyarsk, Ablaketka), only 12.7% of the total length of the USSR high voltage system was situated in the Asian part—which constitutes 79.9% of Soviet territory. Moreover, the great majority of the transmission lines in the east were of an antiquated type, 11 to 110 kv. There were very few kilometres of 220 kv lines and none at all of a higher voltage.[12] Another interesting feature is that Western opinion is inclined to visualize the power stations in the Asian part of the USSR as tremendous units. In fact, on the eve of the sixth five-year plan, the average capacity of large and medium power stations east of the Ural mountains (small stations excluded) was 27,000 kw (as compared with 46,600 kw in the European part of the USSR). The average capacity of turbo-aggregates installed at the so-called regional power stations (i.e. the GRES, which do not include small stations) east of the Urals was as low as 14,000 kw.[13]

It is not surprising that Soviet economists are attracted by the resources in the Asian regions of the USSR. The total heat and water power resources in the USSR are distributed as follows:

	USSR	*Eastern regions*	*European part, incl. Urals and Transcaucasia*
Total thermal fuel resources, milliard tons of conventional fuel	1,428.8	1,259.8	169.0
Potential hydro-power resources,			
a. Capacity, thousand kw	340,000.0	279,504.0	60,496.0
b. Energy, milliard kwh	2,978.4	2,449.0	529.0
c. Conventional fuel, milliard tons	138.9	112.4	26.5
Hydro-power resources scheduled for possible exploitation:			
a. Capacity, thousand kw	196,460.0	167,230.0	29,230.0
b. Energy, milliard kwh	1,721.0	1,465.0	256.0
c. Converted to conventional fuel, milliard tons	86.0	73.4	12.6
Total power resources possible to exploit, in milliard tons of conventional fuel	1,514.8	1,333.2	181.6

Source: *Voprosy ekonomiki* 1957 no. 6 p. 38.

Another source gives data on heat and water power resources in various parts of the Soviet East, as at 1957, as follows (in % of total):

			Eastern Regions		
	European USSR	*Urals*	*Western Siberia*	*Eastern Siberia*	*Far East*
Territory	20.4	3.3	10.7	32.1	13.8
Population	70.3	7.8	5.9	3.3	2.2
Total (geological) thermal fuel resources	11.1	0.7	33.8	42.7	6.9
Hydro-power resources	16.3	1.5	7.1	41.4	14.0

Source: M. G. Shkolnikov, 'O perspektivakh razvitiya i ekonomicheskom raionirovanii vostochnykh raionov RSFSR', *Izvestiya vostochnykh filialov Akademii nauk SSSR* 1959 no. 9 pp. 3–13.

Thus the Asian regions possess about 88% of the heat and water power resources of the USSR, but even in 1955, after the erection of some new power stations, their share in the total production of electricity was not greater than 11.8%. The example of the Irkutsk station clearly showed the obstacles that oppose the construction of new industrial centres in the Siberian or Central Asian regions.[14] Another example is the project of the Bratsk hydro-electric station (Bratsk GES) which was planned without proper consideration of the consuming capacity of the adjoining regions. Recent investigations

have shown that, in order to utilize the full capacity of the Bratsk station, new consumer industries would have to be set up there as well. This means that more than 80 milliard rubles would have to be spent on the construction of machinery-producing plants and factories, and not less than 3,120,000 workers would have to be resettled in this area. Even if the necessary funds could be raised (which would hardly be possible without cutting down on projects in other areas of the USSR), the necessity to transplant over three million workers (with their families) from other parts of the USSR to the Bratsk area renders this project highly unrealistic. This is the reason why at the present time, long after the plan to build the Bratsk hydro-electric station was announced,[15] the erection of a large aluminium plant in the neighbourhood of Bratsk is being discussed. The costs of this plant, which is needed only to consume the energy produced by the power station, would be approximately 4.8 milliard rubles. The number of workers necessary to operate the plant would run to 28,000.[16] This estimate does not include the cost of housing, water supply and irrigation of the present steppe, construction of roads, public buildings, etc. Another factor to be taken into account is the necessity to build a railway from the potential site of the plant (Shelekhov) to the bauxite deposits.[17]

It is of interest, in connection with the Bratsk project, that recently a scheme to build a large aluminium reduction plant in Pavlodar (Eastern Kazakhstan) has been made public.[18] This plant, the largest of its kind in the USSR and in all Europe, will use the bauxite ores from the Turgai area in Kustanai oblast (Kazakhstan). It is most probable that it will be this plant in Pavlodar which will be the main consumer of the energy put out by the Bratsk station, in spite of the distance of many thousand kilometres. It might also use the energy produced by the Irkutsk hydro-electric station, since it is the Irkutsk station which will be completed first and then used to supply energy for the construction of the Bratsk station. The high voltage line which will connect the Irkutsk station with the Bratsk construction site was scheduled to be ready for operation in 1959, and we can deduce that only then will it be possible to embark on the Bratsk project.[19] As to the aluminium reduction plant in Pavlodar, it is possible that at first the plant will use the energy produced by the Angren and above all the Tom-Usynski thermal power stations which were scheduled to come into operation in 1958. There are no signs that the hydro-electric station at Kamen on the banks of the Ob river, planned for the sixties, will become a power supply centre for the Pavlodar plant. What is more, we have not been able to find information that completion of the power station at Kamen is at all included in the revised plan for the next decade.

The lack of power transmission lines, in addition to the difficulties in operating hydro-power stations due to the seasonal irregularities of water flow, make Soviet planners take measures which were not envisaged when plans of industrializing Siberia were drawn up. Thus, to make possible the development in the Krasnoyarsk area, the construction of a new *steam* power station became necessary; the site of Nazarovo was selected and many bitter complaints are to be found in the Soviet press about unforeseen difficulties preventing the Nazarovo plant coming into operation on schedule.[20]

Innumerable obstacles impede the realization of projects in the areas scheduled to be opened up in the Asian part of the USSR. Conditions may still appear favourable to some extent as far as metalliferous ores and coal resources are concerned, for example in the Kustanai district of the Kazakh SSR.[21] On the other hand, it is extremely difficult in these areas to supply sufficient water for industrial and human requirements.[22] Moreover, long-distance transportation of large quantities of primary materials is uneconomic and neutralizes the advantages of abundance or the quality of these materials. An analysis of the situation in the Asian areas of the USSR shows a deterioration in long-distance haulage conditions during the postwar period, and the deficit in fuel supply is continuously increasing: in 1955, 46% of all the fuel used in the Urals area was hauled in from very distant deposits; 34 million tons of coal, for example, were brought from the East.[23] The losses caused by the haulage of this coal alone amounted during the fifth five-year plan to more than 5 milliard rubles, an amount higher than the construction costs of the Pavlodar aluminium reduction plant discussed above. It is well known that the proportion of coal haulage over distances greater than 1,500 kilometres rose from 43% in 1950 to 50% in 1955. It was also found that in 1955 the cost of coal haulage over distances between 1,500 and 2,000 kilometres amounted to between 3 and $3\frac{1}{2}$ times the cost of mining the same quantity of coal in the Asiatic regions.[24] Too hasty construction of the so-called Third and Fourth Metallurgical Centres in the USSR, thousands of miles from each other, and both thousands of miles from power resources and raw material deposits, may so increase transportation costs for the huge quantities of iron and manganese ore, limestone and refractories[25] to be hauled that the profitability of the invested capital becomes more than doubtful.[26]

Many Soviet experts differ in their opinions in many ways from the boastful or 'constructive' reports published in the Soviet press. We regret that Western students do not read more carefully the critical papers published by Soviet specialists in scientific journals, as these articles often point out details of Soviet long-range projects which are

not shown or deliberately glossed over in press releases. As an example we may mention here that A. E. Probst, Ya. G. Feigin, S. G. Strumilin and V. Nemchinov, all of whom are well-known authorities on problems of industrialization, are far from optimistic about the official projects in Soviet Asia and openly disagree with certain schemes.[27] Even Academician I. P. Bardin, while supporting in principle the tendency to create new ferrous industries in regions east of the Ural mountains, does so in a very cautious way. He is well aware of the shortage of manpower in the Asian regions (2.58 persons per sq. mile) and consequently suggests that only modern, automatically controlled processes be applied in those areas. Bardin points out that the opening up of the Pechora coal deposits will improve the fuel situation in the Urals, but he does not conceal the fact that transportation costs will be high because of the sub-polar climate. In the course of his analysis he shows that the newly discovered and much praised iron ore deposits in Northern Kazakhstan and in the vicinity of the Ural mountains are in reality of a poor quality, so that expensive agglomeration and enriching processes would be required to make them suitable for blast furnaces.[28] Bardin suggested in 1957 opening up iron ore deposits in the district of Angara-Pit, provided a new railway connection to the Trans-Siberian trunkline is built.[29] He is not in favour of the project of a metallurgical plant near Irkutsk, since the entire coal deposits near Irkutsk are unsuitable for coking purposes. It would be necessary to mix them with at least equal quantities of Kuznets coal, which means that millions of tons of coal would have to be transported over thousands of miles. Some recent suggestions as to how to overcome these difficulties seem to be entirely unrealistic. For example V. Z. Annenkova proposes a complete change in the technology of the coking process ('*ukrupneniye i uplotneniye pomola shikhty*'), being unaware what these changes mean in terms of cost. Moreover Annenkova knows how to safeguard herself by pointing out that the technological changes suggested do not guarantee a satisfactory result.[30] Nor does Bardin see how large metallurgical plants could possibly be built in the Amur or the Aldan regions, at least in the near future. When we confront the facts supplied by Bardin (we have deliberately chosen one of the most optimistic Soviet scientists) with pictures drawn by some Western students of the Soviet economy (Lebed, Barits, Polezhayev, Vvedenski, etc.) we must point out that most of the Soviet projects, which according to the published works of Western students seem almost completed or at least fully under construction, are actually in an early stage of planning and study by Soviet experts. We are inclined to believe that the Soviet administration will do everything possible to implement the projects mentioned above as soon as possible, but we are

also aware of the obstacles which block economic development in the Soviet East. We therefore subscribe to Bardin's opinion according to which most of the large industrialization projects in Siberia and Soviet Asia will not materialize before the later 1960s,[31] provided, as Bardin stresses, that the necessary railway connections, mines and housing facilities for the workers will be ready by 1965. Bardin, along with the other experts, warns that these preparatory tasks will require much higher investments than similar projects in the European part of the USSR, due to unfavourable conditions in these still uninhabited Soviet Asian regions. Another hindering factor is the necessity to provide food supplies for the future population of the planned industrial centres. The Soviet expert N. N. Kazanski states that the Angara river basin (600,000 sq. km.) is inhabited at present by only 718,000 persons. In the vicinity of Bratsk, where the new hydro-electric plant is to be built, the only farm production comes from nine small collective farms, the nearest agricultural centre (Minusinsk) being 1,200 kilometres away.[32] This is the reason why the Soviet Union was recently compelled to import considerable quantities of wheat and other provisions from China. According to Japanese experts, most of these imported goods are sent east of the Baikal region where only 20-30% of the population, which is increasing continuously because of 'immigration' from the European part of the USSR, can live on indigenous products.[33]

II

Overestimation of Soviet projects in the areas east of the Ural mountains has led to an incorrect notion of the USSR's regional economic development. The purpose of this second part of our article is to show that the Soviets are promoting the rapid industrial development of areas which cannot be identified with the so-called Soviet East or Soviet Asia. The area we shall discuss includes in the first place regions situated directly west of the southern Ural range. Soviet sources refer as a rule to administrative divisions (republics and oblasts) and the newly introduced 'sovnarkhoz' regions mostly fit these divisions. Because of this limitation of the data we have to follow the administrative divisions. However, in analysing the development of two autonomous republics, the Tatar and Bashkir, and two adjoining oblasts, Kuibyshev and Chkalov, we hope to cover the geographical area mentioned above as fully as possible.

Indices such as railway haulage, production of building materials, growth of manpower employed, are useful measurement factors of a region's industrial capacity. These indices are more striking in the case

of the Tatar and Bashkir republics and Kuibyshev oblast than for any other area of the USSR. The data referring to Chkalov oblast are, while still very significant, less impressive mainly because only the northern part of this peculiarly shaped oblast is included in the sub-Urals 'national industrial reserve'.[34] The southern part of Chkalov oblast (the areas situated south of the river Ural and the railway line Chkalov-Sorochinsk), which under different political conditions would belong no doubt to a northern extension of Kazakhstan, is simply steppe where the population is devoted to sheep breeding almost exclusively.

The total sub-Urals 'industrial reserve' belongs entirely to the *European part* of the USSR. The indices of industrial growth of this area which we quote below[35] prove that the efforts to establish new centres of industrial production were by no means limited to the Asian areas of the USSR. The *only* oblast in the whole Asian part that shows indices of industrial growth comparable with those of the Tatar republic, the Bashkir republic and Kuibyshev oblast is the Novosibirsk oblast (some 1,500 km. east of the Urals). Thus the indices referring to the Novosibirsk oblast will also be discussed in some aspects for purposes of comparison. We exclude from our discussion the districts that are already known and generally acknowledged as vital Soviet industrial centres, such as those in the Moscow area, the Gorki region, in the Urals (Sverdlovsk and Chelyabinsk oblasts), in the Donbas and, to a certain extent, in the Kuznets basin, though admittedly they are continuously being enlarged and have been the leading industrial areas for many decades.

In the period from 1950 to 1956, the industrial output of the sub-Urals regions we are discussing increased as follows (in %):

	1950	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*
Tatar ASSR	100	118	129	145	170	216	228
Kuibyshev oblast	100	123	146	159	183	227	249
Bashkir ASSR	100	118	145	168	190	220	254
Chkalov oblast	100	117	132	147	167	191	203
Novosibirsk oblast	100	127	146	168	193	212	236
USSR	100	116	130	145	165	185	205

The picture is still more impressive when we take the comparison back to 1940:

	1940	*1945*	*1950*	*1956*
Tatar ASSR	100	216	345	788
Kuibyshev oblast	100	370	407	1,014
Bashkir ASSR	100	262	362	919
Chkalov oblast	100	204	299	607
Novosibirsk oblast	100	384	369	872

Sources: *Narodnoye khozyaistvo RSFSR*, Statistical Handbook (M., 1957) pp. 109-114; *Narodnoye khozyaistvo SSSR*, Statistical Handbook (M., 1956) p. 47.

When we compare the rates shown in the tables with the rates of increase in production in other regions, we see that they are the highest in the USSR. Only the rates of growth in such areas as Murmansk and perhaps Voronezh surpass them. We have to explain here, however, that increases in the Murmansk area were due only to increases in mining and electric power, not in manufacturing, while the Voronezh area suffered so severely in the war that the figures refer not to new industry but to restoration.

It is evident that the Soviets intensified the industrial development of the Tatar republic, the Kuibyshev oblast and the Novosibirsk oblast not only in 1950–56 but also during the preceding period from 1940 to 1950 (see above table).

We note that industrial output increased in the period 1940–1956 in the Tatar republic by 688%, the Kuibyshev oblast by 914%, the Bashkir republic by 819% and in the Novosibirsk oblast by 772%. The growth of industrial output in the whole of the USSR in the same period was 254%. The increase rates in the Tatar, Bashkir, Kuibyshev and Novosibirsk areas were by far the highest in the USSR. The area which comes closest to these four is that of Omsk, but Omsk used to be a rather neglected part of prewar Russian Siberia, and the high percentage rate was derived from its comparatively small industrial capacity on the eve of World War II. To demonstrate this, we have to go back to 1928. When we compare the situation of 1928 with that of 1955, we find that, while industrial output in Novosibirsk increased to 150 times its former capacity (Novosibirsk town even 280 times), the increase in Omsk was only 84 times, although up to 1928 the industrial growth in both areas was equal, i.e., it was approximately 2.4 times the capacity of 1913.

In the introduction to this article we mentioned the data pertaining to the Union Republics of Soviet Central Asia which seem to attract the interest of some scholars. In the following, we wish to compare these figures with those of the four sub-Urals regions:

(1) *Growth of Industrial Output in sub-Urals and Novosibirsk areas:*

	1940	*1955*
Tatar ASSR	100	747
Kuibyshev oblast	100	923
Bashkir ASSR	100	795
Novosibirsk oblast	100	782

(2) *Growth of Industrial Output in Soviet Central Republics:*

	1940	*1955*
Kazakh SSR	100	422
Kirgiz SSR	100	382
Tadzhik SSR	100	276
Uzbek SSR	100	294
Turkmen SSR	100	257

Sources: *Narodnoye khozyaistvo SSSR* (M., 1956) p. 5; *Promyshlennost SSSR* (M., 1957) pp. 52–54.

No comment is necessary to explain these figures. We based our tables on typical Soviet statistics which give the proportions of industrial output of a certain year (most often 1940 or even 1913). It is of course much easier to use these output percentages, as we do, to determine the increase in industrial capacity, whereas a scholar who tries to find the monetary equivalent of Soviet industrial output in various periods meets with considerable difficulties. According to some research workers, the actual figures of industrial output are lower than those given in official indices.[36] The authors of the Soviet Statistical Handbook of 1956 are careful to point out that the statistics on the increase of industrial output in the USSR refer to the physical volume of production.[37] Data given in later issues of Soviet statistical handbooks are without this note, but the figures are the same as those of 1956, so that we can take it for granted that they, too, refer to the physical volume of production.[38] As to Hodgman's revised indices of industrial output in the USSR, we are of the opinion (which we share with other scholars)[39] that his 'value added' indices show such striking discrepancies between the official and revised indices[40] that they provoke the almost inevitable question: how can Soviet economists and planners make any reliable calculation or estimate when the only data available in the USSR are official statistics?[41] There is not much proof of double bookkeeping in *this* field of statistics in the USSR; however there is no doubt that Soviet indices on the growth of industrial output, as well as statistical data in general which are expressed in terms of monetary values, require correction commensurate with the inflationary tendencies of the ruble. This applies, generally speaking, to all statistical data, expressed in terms of monetary value, of countries in which more or less marked inflation processes have taken place during the past decades. For the sake of simplicity we disregard these questions in this paper.

Besides the data referring to industrial output, we have other statistical returns supporting our view of the importance of the sub-Urals regions. The increase in railway haulage of goods in this area is best expressed by the following figures (in thousand tons):

		1940	*1946*	*1950*	*1953*	*1955*
Tatar ASSR:	Dispatched	1,788	2,762	4,990	5,414	5,736
	Arrived	3,078	2,818	4,898	6,850	7,450
Kuibyshev oblast:	Dispatched	3,905	3,195	7,187	13,736	21,779
	Arrived	4,557	4,302	8,662	12,830	16,788
Bashkir ASSR:	Dispatched	3,266	2,285	5,747	9,550	15,051
	Arrived	2,794	3,301	6,682	8,211	9,636
Chkalov oblast:	Dispatched	4,229	3,691	8,648	11,959	14,784
	Arrived	4,766	6,091	11,718	15,849	20,400
Novosibirsk oblast:	Dispatched	2,614	2,754	4,576	5,578	7,895
	Arrived	933	5,822	10,571	12,286	14,467

Source: *Narodnoye khozyaistvo RSFSR op. cit.* pp. 244–51.

The increase in railway haulage is highest again in the four regions under discussion. The average growth ratio for the entire Soviet Union in the period concerned is 233%, and the ratio for the Russian Federal Republic to which the four regions belong administratively amounts to 220% only. We have to add here that any increase in intensity of communication in a certain area is unmistakable evidence of its industrial activities; there are few factors which are more indicative of growing economic capacity. The density of the railway network, on the other hand, is also a reliable indicator of the economic importance of certain areas. We find that besides the long-established industrial centres of the Ukraine and the Urals and Moscow areas, there are few districts in the USSR that can compare, as to intensity of traffic, with those of Kuibyshev, Bashkiria, or even Novosibirsk.

As to the reliability of freight turnover indices as criteria of the increase in industrial output, it has been found that expansion of freight traffic and increase in industrial production are correlated; they are widely accepted as a standard of judgment of industrial output. According to Lynn Turgeon: 'Thus goods transport is not a bad basis for a rough crosscheck, since nearly all industrial products involve movement (length of railway, long hauls)'.[42] Indices, i.e., the official Soviet indices and not those revised or corrected by Western scholars, show that over the entire period of the Soviet five-year plans, from 1928 to 1955, freight turnover and industrial output have grown at a roughly similar pace.[43] A discussion of the factors which influence the relation between railway freight traffic and industrial production is of little aid to our present theme. We recommend some more detailed studies on the subject which might be of interest to the reader.[44] We merely wish to add that in drawing our picture of freight traffic we

concentrated on railway traffic only and selected data with reference to the tonnage volume of goods which arrived and were dispatched in the areas in question, as the transport-output ratio in this particular case is almost 1:1. The ton-kilometre freight volume indices frequently quoted in Soviet statistics cannot be considered entirely reliable evidence of the increase of industrial output because they have grown much more rapidly than the material value of the output of basic commodities due to the increase in long distance haulage caused by an exploitation of raw material deposits in distant regions (Altai, Temir, Baikal areas, etc.).

Of the other statistical data which provide a good clue as to which regions in the USSR enjoy priority in industrial development we specify particulars on the production of building materials. It would obviously be highly uneconomic to transport brick, tile, and related material to the construction sites from distant places. In fact, the Soviet communications system is so overburdened with haulages of primary raw materials (coal, ores, oil, timber) that facilities for transporting construction materials are restricted. Thus each region where projects are under way is advised to set up its own industries to produce building materials, utilizing indigenous resources. The local authorities have to concentrate on brick production in the first place, as there is a general shortage of steel and concrete in the USSR.[45] Thus we are justified in assuming that data on brick production provide a fair indication of the industrial development in any particular region. The following table shows the increase in brick production in the areas under discussion (in millions).

	1940	*1945*	*1950*	*1955*
Tatar ASSR	73.3	26.8	90.4	215.6
Kuibyshev oblast	97.4	39.0	141.5	402.1
Bashkir ASSR	57.1	22.3	104.9	304.2
Novosibirsk oblast	67.0	30.6	133.0	247.0
Kazakh SSR	220.2	98.3	347.3	622.4
Kirgiz SSR	60.0	11.3	77.9	189.9
Tadzhik SSR	45.1	6.6	48.1	95.8
Uzbek SSR	302.3	67.4	308.0	721.8
Turkmen SSR	87.7	11.1	92.2	165.8

Source: *Promyshlennost SSSR* (M., 1957) pp. 292–5.

Of all the other districts in the USSR, only the Stalingrad oblast registered correspondingly high figures (432.2 million bricks in 1955, compared with 68.9 million in 1940). We must not forget, however, that the Stalingrad area was completely destroyed during the war, so

that brick production was intensified to rebuild prewar industries rather than to serve new projects. When we compare the indices of the sub-Urals regions with those of the Asian republics we have to bear in mind that the area of the Tatar ASSR covers 68,000 square kilometres and that of the Kuibyshev oblast 53,900, while the area of the Uzbek SSR covers 339,000 and that of the Kazakh SSR even 2,766,000 square kilometres.[46] The areas of the Kirgiz SSR (198,000 sq. km.) and the Tadzhik SSR (142,000 sq. km.) are similar to the Novosibirsk area (178,200 sq. km.) and the Bashkir ASSR (143,600 sq. km.), but the brick production in the two former areas amounts only to 76.0% and 31.5% respectively of the production of the two latter. The figures obtained from the Asian republics show *inter alia* the particularly vigorous activity in this field of the Uzbek republic. Considering its area (and its population too) as compared with the other Asian republics, we find Uzbek brick production about seven times higher than Kazakh and some 2.75 times higher than Tadzhik, Kirgiz or Turkmen.

Of the Siberian regions which are supposed to develop soon into new industrial bases, the Irkutsk oblast produced 74.0 million bricks in 1940 and 178.5 million in 1955; the Amur district 16.5 million in 1940 and 49.4 million in 1955. Although these data do not necessarily confirm the thesis of a substantial industrial development in the Irkutsk and Amur districts during the past years, they nevertheless indicate, particularly in the case of the Irkutsk oblast, that 1948-55 were years of preparation for greater things to come. The same is true of the Chkalov district in the South Urals and with some accuracy of the Tashkent district in the Uzbek SSR too.

We wish to stress in this connection that when statistical data on the production of building materials or on the intensity of railway communication are quoted to indicate the economic development in the regions referred to, such illustrative evidence, along with other side-line information such as that on the rise of employment, is given only to supplement the basic data on the growth of industrial output. All this complementary information taken together supplies a fairly reliable overall indication of economic development in the regions concerned. We are forced to use this method because the Soviet statistical handbooks published in 1957-58 do not give data on the most important indicators of industrial development in the individual areas of the USSR; there are no particulars on such items as capital investments, building activities (industrial and housing), or the territorial distribution of machinery industries.

This is why we found it advisable to analyse labour statistics for clues. The following table registers the growth of state-employed manpower (in thousands);[47]

	1940	1950	1955	% of 1940	1956	% of 1940
Tatar ASSR	346	478	660	190	670	194
Kuibyshev oblast	324	554	747	231	751	232
Bashkir ASSR	315	533	716	228	741	235
Chkalov oblast	251	362	469	186	498	199
Novosibirsk oblast	362	493	635	175	667	184

From 1940 to 1955, the average increase in employed manpower in the entire USSR was 52%. During the same period, employment in the Irkutsk district rose 89% and in the Amur district 74%. It is true that in 1940–55 employment in industrial enterprises in the Kazakh SSR rose by 142% (from 917 thousand to 2,236 thousand), but these high employment figures were the result of the resettlement in 1954–5 of many thousands of collective farm workers and agricultural specialists from the Ukraine,[48] Don and Kuban regions, and from some western districts of Russia proper, in compliance with Khrushchev's project to cultivate virgin lands in Northern Kazakhstan. In the other Asian Union republics, average employment rates increased as follows from 1940 to 1955: Uzbek SSR—54%, Tadzhik SSR—69%, Kirgiz SSR—72%, Turkmen SSR—41%. The figures evidencing the increase in employed manpower are not unconditionally indicative of the growth of industrial development, since they cover administrative employees and, what is still more misleading, agricultural workers.[49] As mentioned already in connection with Kazakh SSR, manpower employed at state farms and MTS[50] appear in Soviet statistics as rural workers and employees, not as peasants. We also know that in the newly opened agricultural districts on former virgin lands in the Kazakh SSR and West Siberia, state farms prevail. In the four regions under discussion, too, the number of state farms has been steadily increasing since 1938–39.

We have to add that it is difficult to estimate correctly the labour force in various regions of the USSR. There is still some loose interpretation of such terms as *total* labour, *reported* labour, *residual* labour etc. It may become also a subject of academic dispute to decide what meaning the term 'labour force' has in the USSR. As to the indices of labour derived from general USSR population statistics they are to be interpreted with maximum caution. Many scholars assume particularly large error margins in Soviet population statistics due both to reluctance to release data which might divulge unfavourable information and to deficiencies in the Soviet census system itself. Precautions were taken to avoid the most striking errors and omissions in the new 1959 census,[51] but this census was not free from failures and misinterpretations, as has been indicated in critical notes of Western scholars.[52]

With regard to the questionable reliability of population statistics in the USSR, we decided to limit ourselves to certain selected data on labour. However, if we compare the total 1939 population figures of some large towns in the regions under discussion with the figures of 1956, we notice a considerable rise in the number of inhabitants. Without analysing the factors which brought about this rise, we wish to draw a parallel between the increase in population and the growing significance of the cities in question as industrial centres.

	1939a	*1956b*	*1959c*
Kuibyshev	390,267	760,000	806,000
Ufa	245,863	265,000	546,000
Kazan	401,665	565,000	643,000
Novosibirsk	405,589	731,000	887,000
Irkutsk	243,380	314,000	365,000
Tashkent	585,005	778,000	911,000
Alma Ata	230,528	330,000	455,000

Sources: (a) S. S. Balzak, V. F. Vasyutin, Ya. G. Feigin, *Economic Geography of the USSR* (New York, MacMillan Publishing Co., 1952) appendix I table A-12 pp. 527-31.
(b) *Narodnoye khozyaistvo* SSSR pp. 24-25.
(c) *Narodnoye khozyaistvo SSSR v 1959 g.* (M., 1960) pp. 35-44.

The growth of Kuibyshev and Novosibirsk is more spectacular than that of Tashkent or Irkutsk; the growth of Kazan (capital of the Tatar republic)—and particularly that of Ufa (capital of the Bashkir republic)—is striking too. However, we do not quote these data to confirm our thesis that the sub-Urals districts rank second in importance behind the Ukraine, the Urals and Kuzbass, but merely as an additional detail supplementing the overall picture of industrialization in the USSR. We have to bear in mind that the postwar trends towards decentralization have resulted in the construction of many large and important plants in small towns and villages throughout the territories dealt with in this paper. This is another reason why figures representing the amount of labour in the national economy of those areas are much more indicative of industrial development than population totals.

The growth of population in the sub-Urals regions is particularly striking in view of the fact that climatic and geographical conditions in these areas are opposed to an augmentation of the number of inhabitants. The bare steppe regions and forests of the Tatar and Bashkir republics obstruct human endeavours and present a challenge to physical (and mental) courage. The colonists, mostly immigrants from western districts of the European part of the USSR, are thrown back upon themselves and forced to cope with the unwonted hazards of pioneer life. There seem to be very few who could be stimulated by travel or by contact with diverse scenes and the variety of ancient cultures, which would perhaps be the case in the Asian republics. In

most cases settlers move into these formerly thinly populated areas in compliance with official directives which they do their best to follow.[53]

In the previous paragraphs we discussed various factors which indicate a rapid economic and industrial development in the areas adjoining the Ural mountains, both in the European and the Asian parts of the USSR. We concentrated on these areas which, as has been stated previously, under the present administrative distribution include the Bashkir and Tatar republics and the Kuibyshev (and Novosibirsk) oblasts. It should, however, be noted that our choice was limited by the division schedules in contemporary Soviet statistical handbooks, which refer to autonomous republics and oblasts only. The boundaries of the natural economic regions of the sub-Urals are not necessarily the same as the administrative borders of the republics and oblasts mentioned. They also embrace, for example, some areas which belong to the adjoining districts of the Mari and Chuvash autonomous republics.

It will require additional study to determine the local pattern of industrialization density. The sub-Urals industrial centres are scattered over a fairly large area, extending for example in the west-east direction approximately from Chadayevka (some 250 kilometres west of Kuibyshev) to Asha (95 kilometres north-east of Ufa). As to width, this sub-Urals belt is bounded by the forests of the Udmurt and Mari autonomous republics in the north and the deserts of Western Kazakhstan which extend far into the administrative district of the Chkalov oblast. Consequently, the southern parts of the Bashkir republic and even the Kuibyshev oblast are economically far less developed than the northern and central regions. It is not easy to read and interpret Soviet statistics on the sub-Urals area because of the continuous changes in the administrative partition of the territory between 1926 and 1958. The administrative map of 1926 differs considerably from that of 1939,[54] and the latter has again been changed during the postwar period.[55] The changes in economic regional divisions are still more extensive, as appears from the latest official textbooks on Soviet economic geography.[56] It would be premature to consider even the most recent economic partition of the USSR final or even stable; it is still a subject much discussed in Soviet economic circles.[57]

Irrespective of the changes mentioned in the sub-Urals districts, their industrial growth discussed in this study seems to have been of special concern to the Soviet authorities, particularly during the past decade. An analysis of the official trends during the entire period of the Soviet regime shows that Moscow, in an effort to establish supplementary industrial centres in the USSR, focused its attention in different periods on different parts of the country. For example, in

1930-37 special consideration was given to the development in the Kuznets and Altai regions. At the same time, the Arctic regions attracted the interest not only of scientists and writers, but also of economists and planners. However, there was no information available at that time as to which area of the Soviet Arctic was to be the centre of the potential economic development, emphasis being laid more or less uniformly on the entire belt of Murmansk, Arkhangelsk, Norilsk-Dudinka and Igarka. When the projects of the third five-year plan (1938-42) were announced it became known that the Murmansk area had been selected to grow into one of the most important economic regions in the USSR. Its population had increased ninefold during the years 1926-39.[58] Generally speaking, Soviet economic policy during the third five-year plan most evidently aimed at turning the Soviet Far East into another economically balanced, first-rate industrial centre. The reasons for this were chiefly military.[59] Much energy and money was spent in promoting primary industries in the Far Eastern provinces of the Soviet Union (lumber, cement, coal) by way of preparing them for an ensuing maximum industrial development.[60] However, the results of these initial efforts became a cause of deep disillusionment to the authorities involved. Renewed postwar attempts likewise proved unsuccessful. These repeated failures finally convinced the Soviet leaders as to the ineffectiveness of any premature large-scale investments there.

It is quite possible that it was the disappointments in the Far East along with the difficulties and huge cost of providing adequate facilities for the economic development of central Siberia that induced the Soviet authorities to focus their attention on the sub-Urals area. This trend, although concealed, was evident in the decade after World War II, and although most recent forecasts for the sixties concern themselves in the first place with areas around the river basins of the Angara and the upper Ob and Yenisei, we are inclined to believe that the industrial centres in the sub-Urals areas will continue to grow very rapidly in size and importance.

In fact the recently disclosed data on volume of capital investments in various regions of the USSR is another support for our statement. We quote here figures on investments in selected sovnarkhozy in 1957 and 1958 (in millions of rubles; ruble value as on 1 June 1955):

	1957	*1958*
Kuibyshev	2,337	2,801
Bashkir	2,984	3,157
Tatar	2,065	1,945
Perm	2,602	2,690

Source: *Narodnoye khozyaistvo RSFSR v* 1958 *g.* (M., 1959) pp. 336-7.

Investments in the above areas are by far the highest as compared with all the other sovnarkhozy of the Russian Republic. They exceed by large margins the average figure for investments, in fact they are ten times higher than in other important sovnarkhozy such as Voronezh (366 m. rubles in 1957, 377 m. rubles in 1958) or Bryansk (295 m. rubles in 1957, 288 m. rubles in 1958). Only in the old-established regions of the Urals, the Kuznets basin and Moscow (city and oblast *together*) were investments in the range of magnitude of those in the sub-Urals area.

The project to move part of the industries from the Ural mountains, the Kuznets Basin and Central Russia (Moscow-Gorki) into adjacent regions for military purposes is likely to be implemented too. The increased output of oil in the areas called 'the Second Baku' has no doubt also exercised a determining influence on the development of industry in the sub-Urals regions. It has been announced that the huge new hydro-electric station at Kuibyshev will supply energy to industrial enterprises mainly in the Tatar republic. Another powerful hydro-electric station in Saratov (1,000,000 kw) has been scheduled to be built by 1964. Still more significant is the project to erect a very large steam power plant in Konakovo of 2.8 million kw ultimate capacity which will help cover the needs of the Moscow-Southern Urals triangle.[61] It is a fact that at the present moment the sub-Urals regions (plus the Novosibirsk oblast as an extension of the Kuznets Basin) are the new main centres of industrial production in the USSR, at least as far as production of medium and light machinery, chemicals, optical and precision instruments and apparatus goes. The main objective of these new centres is to take over as much as possible of the production of these goods from formerly established centres in the East Ukraine, the Urals and the Moscow-Gorki area. It is widely known that a large part of the ordnance and military supply produced in the USSR comes from the sub-Urals and the Novosibirsk regions. As it is not the purpose of our paper to discuss this, we merely wish to add that this fact was already confirmed during the final stage of the Lend-Lease period. Additional reports were supplied later by German prisoners of war who returned from the USSR, and whose statements provided the necessary data for highly instructive studies published as early as 1947-8.[62] However, the Soviet authorities, thus warned that secret information was leaking to the West, replaced all the German prisoners of war who worked at the construction of military objects with local forced labour (mostly persons sentenced and deported for collaboration with the Germans, among them many Soviet citizens who were repatriated by the Allies immediately after the war from West Germany and Austria). The German prisoners of war who were

still detained in the USSR during the 'cold war' under the pretext that they were war criminals were employed almost exclusively on reconstruction jobs, rebuilding towns and settlements damaged during the war in the western districts of the European part of the USSR. Only a few worked at projects in Siberia, and these projects were of no military importance. (This may be considered one of the reasons too why the picture of the territorial concentration of industrial development in the USSR has become somewhat blurred during the recent period.)

We may formulate our conclusions as follows: it is certain that the centre of gravity of Soviet industrial production shows a tendency to shift to the east, but this process should not be considered a spontaneous phenomenon, and we should refrain from over-emphasizing the economic significance of the Asian regions. The example of the sub-Urals regions, particularly of those situated in the European part of the USSR, confirms that it is not *exclusively* in the Asian part of the USSR that new vital industrial centres are being created.

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[1] *Treti pyatiletni plan razvitiya narodnovo khozyaistva SSSR* (1938–42 gg.), proyekt (Gosplanizdat, 1939) pp. 139–70, 171–6, tables 211–12.

[2] N. Voznesenski, *Voyennaya ekonomika SSSR v period otechestvennoi voiny* (OGIZ, 1947) p. 192.

[3] *Gosudarstvenny plan razvitiya narodnovo khozyaistva SSSR na* 1941 *god*: prilozheniye k postanovlenii SNK SSSR i Tsk VKP(b), no. 127 ot 17 yanvarya 1941 (ACLS Reprints, Russian Series, no. 30).

[4] *Voprosy ekonomiki* 1957 no. 6 p. 5.

5 In Soviet terminology, 'East' generally means the regions east of the Ural mountains; in press releases it sometimes includes the Urals area too.

[6] Both tables quoted from M. Vilenski, 'Voprosy razmeshcheniye elektroenergetiki', *Voprosy ekonomiki* 1957 no. 6 pp. 30–40. We have to be critical of Vilenski's figures: according to D. Shimkin's computations (in *Minerals, a Key to Soviet Power*, Harvard Univ. Press, 1953 p. 176) as well as '1941 Plan' (p. 13) the share of Asian regions in Soviet coal production in 1941 amounted to some 25–29% maximum. The figures on oil, pig-iron, steel and electricity for Asian parts of the USSR seem also to be rather overestimated by Vilenski.

[7] *Bulletin of the Institute for the Study of the USSR* (Munich) 1957 no. 2 pp. 21–26.

[8] 'New Soviet Ferrous Metallurgical Centers', *ibid.* 1956 no. 11 pp. 21–29.

[9] Although the discussion on construction of the Karaganda steel works became prominent only in 1957–58, those works have actually been under construction for as long as 11 years (see a criticism of the extremely high cost of construction by V. Krasovski, 'Faktor vremeni i kriterii ekonomicheskoi effektivnosti', *Promyshlenno-ekonomicheskaya gazeta* 28.xi.58). Doubt arose recently on the possibility of operating the Karaganda works in 1960 as scheduled (see A. Zherekhov and S. Ivanov, 'Pochemu vstrevozhen Mikhail Guturov', *ibid.* 19.xii.58). At the present moment there are only guesses as to where the steel works of the Third Metallurgical Base will be built. The preparatory steps on construction of the so-called *Second* Western-Siberian works are under way in Tom Usynski, these works being in effect an extension of the Kuznetsk steel works. As to the other projects, the actual seven-year plan envisages only very vaguely the beginning of construction of the Barnaul and Taishet steel works in the seventies (see A. Vedishchev, 'Novoye v razmeshchenii sotsialisticheskovo proizvodstva', *ibid.* 30.xi.58). No evidence whatsoever exists on construction of any steel-works in Irkutsk or Krasnoyarsk. Polezhayev, and Lebed too, while reporting on construction of the above plants were misled by the source of their information, the Soviet monthly *Stal* 1956 no. 6: editorial 'Chernaya metallurgiya Sibiri' pp. 387–8, which they quote incorrectly since there is no word in it on Krasnoyarsk krai or Irkutsk oblast as

potential sites of any steel works. Otherwise around the end of 1960 reports were published on plans to build an iron and steel plant in Taishet—the Taishetski Metallurgicheski Kombinat (TMK). The proposed site is being surveyed and there is some indication of plans to construct a new town of 250,000 future population for workers of TMK and their families some 3 km. east of the plant site. The project is not clear and there is no indication as to when the plant will start production or where the workers will come from. See E. Bando, 'Gigant chernoi metallurgii', *Ekonomicheskaya gazeta* 6.x.60.

[10] I. Z. Lysenko, 'Osobennosti uslovii razrabotki vysokogornykh mestorozhdenii Srednei Azii i Kazakhstana', *Vestnik Akademii nauk Kazakh SSR* 1957 no. 6. The illustration of the difficulties experienced is the production cost (*sebestoimost*) of one ton of concentrate from the Gorna Shoriya and Khakassiya iron ores at the nearby Kuznetsk plants; in 1958 it was 79 rubles, whereas one ton of concentrate from Krivoi Rog iron-ore (Ukraine) cost in Krivoi Rog 35 rubles only. In addition Krivoi Rog concentrates are of much better quality than those from Gorna Shoriya. See A. Osintsev, 'O promyshlennom osvoyenii Kachkanarskovo zhelezorudnovo mestorozhdeniya', *Planovoye khozyaistvo* 1958 no. 12 pp. 72–79.

[11] *Pravda* 7.iii.58; however even after enrichment the content of iron will not exceed 56% (I. Bardin, E. Moskalkov, I. Shapiro, 'Zhelezorudnaya baza chernoi metallurgii SSSR i puti eye razvitiya', *Planovoye khozyaistvo* 1958 no. 12 p. 19). Admittedly there are intentions to use Ayatsk and Kacharsk ores (Kustanai district, Kazakh SSR) to supply the Third Metallurgical Base too. However, in the first place the Ayatsk ore is very poor and thus requires a complicated and expensive enrichment treatment (see *Zhelezorudnaya baza chernoi metallurgii SSSR*, a collective study edited by I. P. Bardin and published by the USSR Academy of Sciences, 1957, pp. 330–52). This is why the Soviet perspective plan envisages the construction of ore-enriching plants in Sokolovo-Sarbaisk, Lysakovsk and Kacharsk in 1959–1965. Secondly, and more important, the production of these enriching plants is supposed to supply primarily the *existing* steel-plants in the *Urals* area (which, as is well known in the USSR and abroad, are running dangerously short of iron-ore supplies), and the Karaganda works will get eventually only what may be *left over* from the output of Ayatsk ore-concentrate (see U. Atambayev, 'Razvitiye ekonomiki Kazakhstana i zadacha finorganov', *Finansy SSSR* 1958 no. 12 p. 26). It is worth noticing that Soviet geologists are far from happy about the quality of recently prospected and advertised iron-ore deposits in Soviet Asia. They frequently point out that it would be very risky for the new metallurgical plants to depend on these deposits, and they urge renewed and extended geological prospecting (e.g. G. L. Pospelov, *Izvestiya vostochnykh filialov Akademii nauk SSSR* 1957 no. 3; M. K. Korovin, *ibid.* 1957 no. 9 pp. 19–23; P. E. Offman, *Izvestiya Akademii nauk SSSR* Seriya geologii 1957 no. 10 pp. 15–24; V. A. Vakhrushchev, *ibid.* pp. 39–47; S. Morgun, *Ekonomicheskaya gazeta* 20.x.60).

[12] B. Sergeyev, 'Problemy razvitiya khozyaistva Sibiri v byulletenyakh sovnarkhozov', *Planovoye khozyaistvo* 1958 no. 12 pp. 87–90.

[13] M. Vilenski, *op. cit.*

[14] Soviet planning authorities face not only the problem of allocation of consumption of electric power, the rapid increase of which is planned for the next decade, but also the problem of economic allocation of *consumption of metal* to be produced in Siberia. In 1956 from the total of 4.3 million tons of rolled iron produced in Siberia, 1.8 million tons or as much as 42% was exported to the Urals and to European parts of the USSR for use in construction and engineering there.

[15] Radio Moscow 21.ii.56.

[16] The figure is calculated from the experimental formula according to which 1.4 units of labour and 240,000 rubles of capital investment are needed for the consumption of each million kwh of electricity at an aluminium reduction plant built to consume this energy. If the machinery industry is to be the consumer of the electric energy, construction costs will amount to 156 labour units and 4,200,000 rubles investment for each million kwh consumed.

[17] Soviet *local* authorities seem anyhow to be in favour of the construction of an aluminium reduction plant in the Irkutsk-Bratsk area. The Chairman of Irkutsk sovnarkhoz, M. Markelov, is of the opinion that it is economically more justified to import the alumina ores from distant deposits than to transport the electric energy of Bratsk or Irkutsk GES those distances (see 'Ekonomiku Irkutskovo raiona razvivat kompleksno', *Promyshlenno-ekonomicheskaya gazeta* 24.xii.58).

The wood and pulp chemical works, the construction of which is planned in the Bratsk area (around Nazarovo) will certainly become important consumers of the output of Bratsk GES. The huge balance of this output, however, remains still to be used elsewhere.

We do not discuss here the problem of using the power supply of Irkutsk GES and Bratsk GES in atomic industry or similar projects.

[18] *Voprosy ekonomiki* 1957 no. 8 p. 157.

[19] *Pravda* 2.iii.58 reports on the completion of the transmission line. The line is 628 kilometres long and runs through the taiga. The cables weigh 5,000 tons, 3,200 hectares of forest had to be

cut and the construction of masts required 15,000 tons of structural steel and 52,000 cubic metres of concrete.

[20] See *Ekonomicheskaya gazeta* 26.x.60 (L. Luban, 'Ogni bolshoi Sibiri'), 30.x.60 (A. Furdyk, 'Mnimoye blagopoluchiye; pochemu sorvan pusk l-vo agregata Nazarovskoi GRES?'), 30.xi.60 ('Stroiteli Nazarovskoi GRES zhdut pomoshchi').

[21] In fact the share of propected iron-ore deposits in eastern regions of the USSR represents only 12% in the total of USSR deposits (Western Siberia—7%, Eastern Siberia—around 5%). The share of Soviet Central Asia amounts to the iron-ore deposits of the Kazakh SSR only, which is about 18% of the USSR total. However the share of iron-ore deposits suitable for blast-furnaces is in the whole Soviet East (including the Kazakh SSR) still lower and amounts to not more than 20% of total reserves, the other 80% being in the European part of the USSR (Bardin, Moskalkov, Shapiro, *op. cit.*).

It is fairly well known that the Kuznetsk basin is the *only* actual source of industrial coal in all the Asian part of the USSR. It is less well known that the *coking coal* reserves of the Kuznetsk basin are extremely limited. To quote I. Bardin,' . . . however the reserves of the most valuable coking and rich (*zhirnykh*) coals of this [Kuznetsk] basin are limited'. The same is true of the Prokopev-Kiselev deposits ('. . . their reserves are not great . . .') (see Akad. I. P. Bardin, 'Chernaya metallurgiya Vostochnoi Sibiri', *Promyshlenno-ekonomicheskaya gazeta* 31.viii.58) and of the Bureya deposits (see V. S. Kaminski, V. I. Korshunov, M. S. Sokolova, 'Obogashcheniye Bureiskikh uglei metodami tsentrobezhnoi separatsii i kombinirovannymi', *Izvestiya Sibirskovo otdeleniya A.N. SSSR* 1959 no. 1 pp. 34-43). The feverish prospecting for coking coal in Soviet Asia has not been successful ('coal suitable for coking has so far been found on an insignificant scale', Bardin, article cited in this note).

[22] The iron-ore enriching processes require great quantities of water. Cf. Prof. I. Yakovlev at the Conference of the Academies of Sciences of the USSR and Kazakh SSR and the Ministry of Geology of the Kazakh SSR, held in May 1957 in Kustanai.

Alarmed by warnings expressed at the said conference numerous scientists went to investigate the problem of water supply in Kazakhstan in a rather detailed manner. As a result several symposiums have been published recently, e.g. S. Daulenov and M. Zozulya, *Vodnoye khozyaistvo Kazakhstana* (Kazgosizdat, Alma Ata, 1959), *Problema vodoobespecheniya Tsentralnovo Kazakhstana* (A.N. Kazakh SSR, Alma Ata, 1960). The problem of water supply is treated also in works discussing the possibilities of development of power stations in arid and semi-arid zones (Sh. Ch. Chokin, *Raschetnaya obespechenost raboty gidroelektrostantsii* (A.N. Kazakh SSR, Alma Ata, 1958), *Trudy Instituta energetiki A.N. Kazakh SSR*, vol. II (Alma Ata, 1960)). The findings of the investigations are far from optimistic.

[23] The imports into the Urals area of coal from the Kuznetsk basin and in part from the Karaganda and Ekibastuz deposits amounted to 41 million tons in 1957, the share of those imports in the coal requirements of Urals industry increasing to 56% (L. Z. Kats, 'Izmeneniye struktury toplivnovo balansa i sokrashcheniye dalnosti perevozov topliva', *Zheleznodorozhny transport* 1958 no. 12 p. 25).

[24] L. Z. Kats, 'Problemy toplivnovo balansa i mezhraionniye svyazi', *Voprosy ekonomiki* 1957 no. 6 p. 47.

[25] Up to 1957 all the refractories used in the Soviet East were imported from the European part of the USSR, mostly from the Ukrainian area. In view of sovnarkhozy becoming more independent, and due to the trend to develop local resources in each sovnarkhoz, the local authorities in the Soviet East became alarmed and a survey of possibilities of producing refractories in Siberia was initiated. For the proceedings of a special conference held in Stalinsk on 19-20 June 1957 see the report:'Perspektivy obespecheniya Kuznetskovo metallurgicheskovo kombinata ogneupornym syrem'. *Izvestiya vostochnykh filialov A.N. SSSR* 1957 no. 12 pp. 120-121. However, while initial survey findings were to some extent optimistic (Prodanchuk, Pilipenko, Matveyeva), the more detailed subsequent investigations show that possibilities are very limited. (A. T. Logvinenko, Z. V. Fedorova, 'Bezobzhigovy talkovy kirpich i periklazo-forsteritovy ogneupor iz talkov Krasnoyarskovo kraya', *Izvestiya Sibirskovo otdeleniya A.N. SSSR* 1959 no. 1 pp. 44-50).

[26] Obviously it is also highly uneconomic to build thousands of miles of railways in most severe topographic and climatic conditions of Siberia just to connect distant deposits of ores or fuel of doubtful quality with centres of hypothetical consumption. The statements frequently spotted in the Soviet press on plans to build railways linking, say Abakan with Slyudianka or Abalakova with Usovo, etc., tend to be of a declaratory nature. We must not forget that Soviet spectacular projects have in the past usually operated at huge financial loss, which has been 'equibalanced' by such factors as unpaid or heavily underpaid labour on a very large scale and tremendous sacrifices by the entire Soviet population.

In 1957-1958 the Soviet authorities became more aware of the need for rationality in running their industrial development and began to weigh much more carefully the practical possibilities of large projects before starting the actual construction. There are many indications of this

change, such as the dropping of the once widely acclaimed afforestation scheme, cancellation of some hydro-projects, the drive to utilize poor metallic ore deposits, condemning 'Stalinist' overdecorated architecture, etc. The transport specialist T. Khachaturov explains these measures as follows: 'When we postpone those tasks to a more distant future beyond the seven-year plan, we do this not because we underestimate them but because we must take into account our real possibilities of capital investment in the national economy' ('Transportniye svyazi Vostochnoi Sibiri', *Promyshlenno-ekonomicheskaya gazeta* 8.x.58). The same explanation is given by the Chairman of the Council for Research into Productive Resources, N. Nekrasov, who said at the conference held in Irkutsk in August 1958, authorized to draw up a perspective plan of development for Siberia: 'Particular attention was paid to the task of effective and rational use of capital investments in efforts to utilize the natural deposits. It can be started with industrial processing of some prospective deposits only when there is a guarantee to achieve a real minimum of all costs of materials, equipment and manpower and when utilization proper of processed raw materials will be economically advantageous' ('Bolshoye budushchee Vostochnoi Sibiri', *Promyshlenno-ekonomicheskaya gazeta* 29.xii.58).

[27] It is interesting and instructive to watch the fighting among Soviet scientists and planners that is now going on around problems of *where* to build the steel-works of the 'Third Metallurgical Base'. We quote here only some of the more characteristic statements released in November 1958. Thus V. Bessonov (Learned Secretary of the Council on Productive Forces of the Kazakh Republic Academy of Sciences) is critical of the quality of Siberian iron-ores and consequently condemns Bardin's views on the poor quality of Kazakh iron ores (*Izvestiya* 2.xii.58). L Melnikov (Chairman of the Kazakh Republic State Planning Commission) stresses the dangers of the water shortage in central Kazakhstan, condemns the abandonment of plans for building the Irtysh-Karaganda Canal and strongly opposes the scheme to build a metallurgical plant in Barnaul area—because it is expected to use the Kustanai iron-ores (*Izvestiya* 27.xi.58). Of the same opinion is D. Kunayev (Chairman of the Kazakh Republic Council of Ministers: *Pravda* 22.xi.58). Thus when Bessonov fights the project to develop iron-ore prospecting in the Angara-Pit region, both Melnikov and Kunayev fight also the project to build steel-works in Barnaul, whereas P. Lomako (Chairman of Krasnoyarsk Economic Council, *Pravda* 1.xii.58) attacks both the plan to build the Barnaul steel-works and the plan to concentrate on local utilization of Kustanai iron-ore: instead he is in favour of prospecting the Angara-Pit deposits, but as a site for the metallurgical plant, however, he selects Krasnoyarsk.

We find a strange 'safe' approach by L. Pustovalov, a Corresponding Member of the USSR Academy of Sciences (*Pravda*, 12.xi.1958) who favours the development in the Angara-Pit region as well as the Khakassk (Krasnoyarsk territory) region. In this connection Pustovalov speaks of *coking* coal in Yakutia that should represent some 15-18 % of the total coal deposits there. Pustovalov's suggestion on the possible use of Yakutia coal in Siberian metallurgical plants sounds extremely naïve; he seems to be unaware of the problems of mining, power and water supply and transportation in tundra-like regions. It is significant that almost every Soviet geologist when expressing favourable views on this or that spot on the map of Soviet Asia selected by him suggests inevitably the construction of various railway trunk lines (as does Pustovalov, who wants a Bum-Chulman-Tayezhnaya railway). On the difficulties of establishing those connections see footnotes 26 and 29.

The variety of views on development of the Soviet Eastern regions is another indication that none of the areas discussed offers definitely favourable conditions for creating new industrial centres. We are not surprised that in face of all this fighting (which frequently takes ridiculous forms of exaggerated regional 'patriotism') there are some voices heard that warn against disastrous possible results of too hasty construction in Soviet Asia. A. E. Probst and Ya. Feigin are two prominent scientists who have felt obliged to criticize severely the plans regarding development of Soviet Asia in the present seven-year plan. Being aware of extreme shortages of coking coal in areas east of the Urals (for technical details of various coal basins see *Gornoye delo*, Entsiklopedicheski spravochnik vol. 2 Geologiya ugolnykh mestorozhdenii, Ugletekhizdat, Moscow, 1957 pp. 295-446), Probst suggested increased use of electric power in iron smelting processes (*Pravda* 17.xi.58). Almost immediately he was confronted by V. Andreyev pointing out that electric power was still too expensive in Soviet Asia even in the close vicinity of Bratsk or Krasnoyarsk hydro-electric power stations; a bold and yet true statement seldom found in Soviet publications (*Pravda* 27.xi.58). It would be of interest to recall that Probst's views on territorial ocation of power supply centres in the USSR were criticized by the Party already in 1955 (*Pravda* 14.v.55). According to Feigin's opinion, there is a pressing need to work out as soon as possible the general scientific hypotheses for the integrated development of the complex economic and geographical regions in the Asian part of the USSR over a period of many years. The actual seven-year plan breeds the menace that newly developed areas will be unable to cooperate rationally (*Izvestiya* 30.xi.58). This remarkable conclusion can be safely accepted as summing up Soviet discussion of new tasks in the development of the Asian regions of the USSR.

Academician S. Strumilin (*Literaturnaya gazeta* 2.xii.58) shares the views of Probst as well as Feigin. He favours the introduction of electric furnace production of pig-iron in plants of the 'Third Metallurgical Base'. He also is very critical as to the effectiveness of the investments policy regarding the planned development of Soviet Asia. Strumilin correctly points out that heavy investments envisaged for the 1958-1965 period (around 100 milliard old rubles) result in a slower rate of growth of the iron and steel industry than in the past years. But what is still more striking, Strumilin unmasked two other bottlenecks in the actual seven-year plan. The first is the harmful overcentralization of state farming: 'Leaving the management of agriculture, the most diffuse branch of the economy, in the hands of a single centre, while management of industry has been placed mostly in the hands of the economic councils, breaks the very important economic ties between them'. The other weak point of the seven-year plan is the reduction of budget expenditures on social-cultural measures and we can only agree with Strumilin that current plans for development of the eastern regions do not worry at all about the real needs of men as human beings.

[28] *Planovoye khozyaistvo* 1957 no. 2 pp. 25 ff.

[29] As a first stage the railway from Achinsk to Abalakovo has to be built, and only then may its extension in the direction of Angara-Pit deposits be considered. The Achinsk-Pit railway would include, *inter alia*, bridging the wide river Yenisei, a task which involves extreme technical and financial difficulties. Those are of such a magnitude that Soviet engineers are inclined to build a dam rather than a bridge. In addition to climatic and technical obstacles that make the decision on building the railway uneasy, there is severe criticism as to the quality of Angara-Pit iron-ore. A recent, more accurate, analysis showed that these ores are extremely difficult or completely unsuitable for enriching processes because of unusually high content of silicone and other impurities. In one of his most recent statements Bardin says clearly 'One absolutely cannot visualize the development of a metallurgical industry in Siberia without prior establishment of adequate ore-enrichment capacities' ('Chernaya metallurgiya Vostochnoi Sibiri', *Promyshlenno-ekonomicheskaya gazeta* 31.viii.58).

[30] 'Polucheniye metallurgicheskovo koksa iz uglei Yakutskovo basseina i otkhodov polukoksovovo proizvodstva', *Izvestiya Sibirskovo otdeleniya A.N. SSSR* 1960 no. 7 pp. 53-60.

It has recently become the universally accepted view in the USSR that the quality of Siberian coal is not satisfactory. After a thorough investigation of the majority of deposits the conclusion reached is that they may be of exclusively *local* importance and long-distance transport of the coal would not be justified (I. P. Krapchin, 'Perspektivy razvitiya ugolnoi promyshlennosti Vostochnoi Sibiri', *ibid.* 1960 no. 12 pp. 3-12).

[31] *Planovoye khozyaistvo* 1957 no. 2.

[32] N. N. Kazanski, 'Selsko-khozyaistvennoye osvoyeniye srednevo Priangarya v svyazi so stroitelstvom Bratskoi GES', *Izvestiya A.N. SSSR*, Seria geograficheskaya, 1957 no. 3 pp. 32-47.

[33] *New York Times* 19.ii.58.

[34] The distance between the east and west borders of Chkalov oblast is 750 km., whereas its width from north to south in the vicinity of its most important part (Mednogorsk—Novo Troitsk—Orsk) is approximately 60 km. The oblast, created only in 1934, is called the 'Russian Corridor' (between Baskiria and Kazakhstan). In 1960 the Chkalov oblast was re-named the Orenburg oblast.

[35] Most of the basic statistical data we give here refer to the situation up to the middle 1950s, thus covering the period of two postwar five-year plans. In some instances, however, we quote the most important data illustrating development in the late 1950s also.

[36] e.g. Donald R. Hodgman in *Industrial Production in the USSR, Symposium on Soviet Economic Growth*, ed. Abram Bergson, Row-Peterson, N.Y.-White Plains, 1953, pp. 225-44.

[37] *Narodnoye khozyaistvo SSSR*, Statistical Handbook (M., 1956) pp. 45-47, 51.

Although Soviet sources usually do not refer to any weighting procedure, there is nevertheless a trend in the USSR to find a relation between physical volume of industrial output and its monetary value. However complicated the method, Soviet planners seem to weight each product separately and ascribe a money value to it. The best indication of this method being applied is a new statistical handbook on Soviet foreign trade (*Vneshnyaya torgovlya SSSR za* 1918-1940 *gg., Statisticheski obzor* (Vneshtorgizdat, M., 1960) wherein some 600 products are detailed in terms of physical volume and monetary value. Moreover the monetary value of each product is given in the current ruble value of each corresponding year and in revalued 1950 ruble prices. Since prices of 1913 and 1926-7 are also included we have now the possibility of comparing the relation between 1913, 1926-7 (the so-called 'constant ruble prices' used in Soviet compilations for many years) and 1950 price indexes. Corresponding to tables in the quoted Soviet source (pp. 13 and 14) the value of the 1913 ruble is 362.5% and that of the 1926-7 ruble 348.0% of the ruble value in 1950. Thus having in hand a value yardstick for a large proportion of Soviet products we may view the Soviet output indexes given in physical volume as quite indicative.

[38] *Narodnoye khozyaistvo RSFSR*, Statistical Handbook (M., 1957) pp. 106–114. *Promyshlennost SSSR*, Statistical Handbook (M., 1957) pp. 50–54.

[39] e.g. Naum Jasny, Dimitri B. Shimkin, Roland R. Oertel, Erik Boettcher, Bertrand de Jouvenel.

[40] The discrepancy shows that the rate of assumed real growth of Soviet production in 1950 as compared with 1928 was merely half of the value of the rate given by Soviet sources.

[41] All professional and scientific periodicals in the USSR refer to those figures (e.g. *Izvestiya A.N. SSSR*, various series, *Planovoye khozyaistvo*, *Voprosy ekonomiki*, *Dengi i kredit*, *Vestnik statistiki*, *Finansy SSSR*, *Kommunist*, *Promyshlenno-ekonomicheskaya gazeta*, *Vestnik A.N. SSSR*—to mention only the most important).

[42] 'Cost-Price Relationships in Basic Industries during the Planning Era', *Soviet Studies* vol. IX.

[43] In 1928–32 the rates of growth of freight traffic exceeded those of industrial output. In 1939–40, on the contrary, the rate of growth of industrial output was higher than that of freight traffic. The discrepancies, however, were small.

[44] James H. Blackman, 'Transportation in the USSR', in *Soviet Economic Growth*, *op. cit.* pp. 135–46 (126–62); also his *Transport Development in the Soviet Union* (University of South Carolina, Essays in Economics no. 3 February 1957); M. Gardner Clark, *The Economics of Soviet Steel* (Harvard Univ. Press, 1956), chap. 6 (The Effects of Specialization and Large Scale of Plants upon Volume of Transportation), chap. 12 (The Role of Transportation in Location); Holland Hunter, *Soviet Transportation Policy* (Harvard Univ. Press, 1957).

Among Soviet publications on the subject the following deserve mention: A. N. Naporko, *Ocherki razvitiya zheleznodorozhnovo transporta SSSR* (M., 1954); E. V. Mikhaltsev, *Sebestoimost zheleznodorozhnykh perevozok* (Transzheldorizdat, M., 1957); E. D. Khanukov, *Transport i razmeshcheniye proizvodstva* (Transzheldorizdat, M., 1956); E. D. Khanukov and V. I. Chernyshev, ed.: *Voprosy ekonomiki zheleznodorozhnovo transporta* (M., 1948). Books by Khanukov are particularly instructive.

In 1957 a Statistical Handbook, *Transport i svyaz SSSR*, was published that supplies systematically compiled data, mainly on the 1940–55 period, which had been extremely difficult to obtain in the West.

[45] See the new Decree on housing construction, *Pravda* 2.viii.57.

[46] The area of the Asian republics is quoted according to *Narodnoye khozyaistvo SSSR* (M., 1956) pp. 22–23. More recent statistical handbooks give slightly different figures (e.g, Uzbek republic—408,900 sq. km., Kazakh republic—2,756,000 sq. km.), those being a result of some inter-republic boundary corrections (*Narodnoye khozyaistvo SSSR v 1959 g.* (M., 1960) pp. 48–49).

[47] *Narodnoye khozyaistvo RSFSR* (1957 edition) pp. 271–2. The figures refer to September of each year. (Later editions of the same statistical abstract give somewhat different figures representing annual averages, but do not provide a series back to 1940.)

[48] See the estimate of population decrease in Ukraine for the years 1939–56 by Yu. P. Mironenko, *Bulletin of the Institute for the Study of the USSR* (Munich) 1956 no. 11 pp. 30–31; also Joachim Barth, 'Die Bevölkerung Russisch-Asiens seit 1939', Osteuropa 1958 no. 10–11 pp. 679–93.

[49] The reader will find a detailed analysis of the problem in *The Population of the Soviet Union, History and Prospects* by Frank Lorimer (League of Nations, Geneva, 1946) pp. 99–111, 218–30. Although this volume was published more than a dozen years ago, it has not been made obsolete by any of the more recent works.

[50] The system of MTS was abolished in 1958. Our data, however, refer to the period prior to 1958. Also, the process of transition of the MTS system to some other structural form affiliated directly with kolkhoz or sovkhoz property will certainly take a considerable time, especially in the areas where the state farms (sovkhoz) prevail.

On problems of agriculture in the sub-Urals see more in: L. V. Arnoldi and D. M. Shteinberg, 'Obshchegeograficheskaya kharakteristika raionov srednevo i nizhnevo techeniya r. Urala', *Trudy A.N. SSSR* vol. 2, 1952; M. S. Buyanovski, 'Voprosy razvitiya oroshayemovo zemledeliya i lugovodstva v nizoviyakh r. Urala', *Izvestiya A.N. SSSR*, seria geograficheskaya 1951 no. 1; A. G. Gael, 'Peski severo-zapadnovo Kazakhstana', in Symposium *Kazakhstan* (Sovet po izucheniyu proizvoditelnykh sil, A.N. SSSR, L., 1932); M. A. Govar, 'O poryadke osvoyeniya tselinnykh i zalezhnykh zemel i ukrepleniya kormovoi bazy zhivotnovodstva v severnykh i zapadnykh oblastiyakh Kazakhstana', *Vestnik A.N. Kazakhskoi SSR* 1954 no. 4; I. V. Larin and F. Ya. Levina, ed., *Priroda i kormoviye osobennosti rastitelnosti limanov Volgo-Uralskovo mezhdurechiya* (M.-L., 1956); A. Uchinchus, 'Problema reki Urala', in Symposium: *Kompleksniye vodokhozyaistvenniye problemy SSSR* part 3 (M.-L., 1953). V. F. Chervinski, *Puti selskokhozyaistvennovo osvoyeniya zemel v polupustynnoi i pustynnoi zonakh SSSR* (A.N. SSSR, M., 1960).

[51] See series of articles by B. Kolpakov, T. Uvashev, A. Gubin, Z. Goryusheva, V. Govorova, A. Kobzev, V. Alekseyev, E. Danilov, K. Orekhov, M. Mysov, in *Vestnik statistiki* 1958 no. 11 pp. 10–33; no. 12 pp. 12–18, 31–42; 1959 no. 1 pp. 3, 49–69. Also: Galina V. Selegen, 'Vor der neuen Bevölkerungszählung in der Sowjetunion', *Osteuropa* 1958 no. 10–11 pp. 702–5; and G.

Maksimov and M. Marakhanov, 'Vsesoyuznaya perepis naseleniya 1959 g.', *Voprosy ekonomiki* 1958 no. 9 pp. 49–59.

[52] Michael K. Roof, 'The Russian Population Enigma Reconsidered', *Population Studies* (London), vol. XIV no. 1 (July 1960) pp. 3–16; also: 'The First Reports on the Recent Population Census in the Soviet Union' by Galina V. Selegen, *ibid.* pp. 17–27.

[53] Authorities in some Siberian regions seem to become disturbed by the hardships to which new migrants are exposed, a feature hardly expected to take place in the preceding period when forced labour was used on a much larger scale than now. The problem how to satisfy the everyday needs of new labour brought to Siberia from other parts of the USSR was, *inter alia*, a topic at a conference called by the Institute of Economics and Organization of Industrial Production and by Gosplan of the Russian Federation at Krasnoyarsk in May 1960 (*Izvestiya Sibirskovo otdeleniya A.N. SSSR* 1960 no. 8 pp. 155–8).

[54] See maps in *Population of the Soviet Union* by Frank Lorimer, *op. cit.* pp. 44, 45, 152, 153.

[55] The instability of administrative divisions is illustrated by the Arzamask oblast, which was created in January 1954 and abolished in April 1957.

[56] G. N. Cherdantsev, N. P. Nikitin, B. A. Tutykhin, *Ekonomicheskaya geografiya SSSR* parts I and II (M., 1956), and the maps attached.

[57] A. Danilov, 'Ekonomicheskoye raionirovaniye i territorialnoye planirovaniye narodnovo khozyaistva SSSR', *Planovoye khozyaistvo* 1957 no. 2 pp. 30–37; I. V. Komar, 'K voprosu o granitsakh Urala kak ekonomicheskovo raiona', *Izvestiya A.N. SSSR*, seria geograficheskaya 1957 no. 3 pp. 23–31; P. M. Alampiev, 'Ekonomichesko-administrativniye raiony SSSR', *ibid.* 1957 no. 5 pp. 8–24; V. Kostennikov, *Ob ekonomicheskom raionirovanii SSSR* (Gospolitizdat, M., 1957); N. Nekrasov, 'Formirovaniye novykh krupnykh promyshlennykh raionov na Vostoke', *Voprosy ekonomiki* 1958 no. 12 pp. 33–44; Yu. Koldomasov, 'Ratsionalizatsiya mezhraionnykh ekonomicheskikh svyazei v semiletnem plane', *ibid.* 1959 no. 1 pp. 26–34.

[58] S. S. Balzak, V. E. Vasyutin, Ya. G. Feigin, *op. cit.* appendix VII tables A-22. The statistical data on 1950–55 confirm the news that the Murmansk district (as well as the Vorkuta region in the Komi ASSR) continued development in the postwar period.

[59] There is no doubt that the Japanese expansion on the Asian mainland (the occupation of Manchuria) was of influence. The tension resulted in many serious border incidents between Soviet and Japanese troops in 1938–39 (action at Lake Khasan and the Khalkin-Goll river, directed on the Soviet side by Marshals Blukher and Zhukov).

[60] Investments in the Soviet Far East amounted in the period 1938–41 approximately to 10% of the total budget of the third five-year plan.

[61] *Ekonomicheskaya gazeta* 26.xi.60.

[62] See for example 'Die Reorganisation der russischen Panzerwaffe', *Neue Zürcher Zeitung* 1948 no. 1519, 1561; 'Flugzeugindustrie und Luftwaffe der Sowjetunion', *ibid.* 10, 13, 17, 20 and 24 November 1948.

A RESURRECTED RUSSIAN ECONOMIST OF 1900

WESTERN students have been observing with interest the development of Soviet economic thought in the past four or five years. Many fundamental questions have been raised and argued about. For instance: what is the relevance of the Marxian theory of value to the Soviet economy? How should real costs be measured and compared? What should be added to prime cost (*sebestoimost*) to arrive at full cost or 'value' of a product? What changes in the price structure and what institutional reforms are necessary to promote a more rational use of economic resources within the Soviet planning system? These and other matters have been the subject of intensive and open debate.

Some, the 'conservatives', do not favour any fundamental changes in existing arrangements, though they admit the existence of anomalies which they wish eliminated (Turetski, Maizenberg, *et al.*). The majority of academic economists advocate major reforms of theory and practice, but among them several schools of thought have emerged. For example, Strumilin argues that prices should equal their 'values', defined as average prime cost of the given product plus a share of the 'surplus product' proportionate to the wages bill. Others (for instance, Vaag) prefer the surplus product to be shared out proportionately to capital employed, which they claim is in accordance with Marx's concept of *Produktionspreis*. Several other economists have their own variants, and have put forward a number of theoretical explanations for the survival of value and commodity relations within a Soviet-type economy.

Alongside these arguments, to some extent independently of them, there grew up a mathematical school anxious to use within the Soviet planning system modern econometric techniques, and in particular optimal programming.

It is a characteristic feature of the programming approach that prices—or 'valuations'—of products emerge as opportunity indicators, so that from this point of view the arguments of the production-cost schools—of the reformers of the Strumilin and Vaag schools, and of the conservatives like Maizenberg—are largely irrelevant. The economy, and costs incurred within it, are seen in this frame as a whole; valuations emerge in a way which reflects alternatives foregone, substitution, relative scarcities, in relation to the programme.

To the 'orthodox' this view appears to be in conflict with the labour theory of value, and for this reason it has been vigorously attacked: it is claimed that the price evolved in the econometrician's programme is marginalist in its nature and based on subjective theory of value and, therefore, irreconcilable with Marx's doctrine.

It is clearly essential for those representing the mathematical—the 'planimetric' wing—to counter these attacks, that is to reconcile the ideas with Marx, to deny that they are guilty of a 'subjectivist' deviation and to prove that, on the contrary, they are concerned with real costs, on the scale of the entire economy, which are in the last resort reducible to labour.

The reader of these polemics cannot fail to be intrigued by the cropping up, with a growing obstinacy and emphasis, of the name of an obscure Russian author who wrote at the turn of the century. The name is V. K. Dmitriev,[1] and the first reference to him is traceable to Academician Nemchinov's introductory paper of the fundamental 1959 econometric symposium. Therein Prof. Wassily Leontief was paid tribute for having supplied a mathematical interpretation of the overall balance of an economy 'by means of linkage equations of cost and output [of the kind] indicated in the past in the work of Walras and of V. K. Dmitriev'.[2] Thus for the first time the latter's *Ekonomicheskiye ocherki* (Economic Essays) appeared in contemporary Soviet writing alongside the *Elements d'économie pure*.

One familiar with the Soviet habit of establishing claims to Russian priority in various fields of human accomplishments may be perhaps forgiven a suspicion that in this case too a native name had been brought in for the sake of greater respectability of foreign borrowed ideas (this is invoked as an extenuation for an unfair remark in the pages of this journal.)[3] But in recent contributions from the leading lights of the econometric school—first from Nemchinov[4] and later also from Professor Novozhilov[5]—Dmitriev's formulations have assumed such an important place that they must dispel doubts as to the genuine influence of the forgotten man's revived ideas on to-day's thinking. His re-emergence from oblivion would by itself excite a student's curiosity: what was he talking about, what does his name stand for? In regard to the second question, intellectual curiosity is stimulated by the hope of finding clues for the present Soviet debate in which much is deliberately said in the form of allusions and reticences rather than explicit statements.

Here, however, detection meets with disappointment: no copy of Dmitriev's work is extant in this country. But it is a consolation prize to find his mathematical apparatus faithfully reproduced—with generous acknowledgment—by Ladislaus von Bortkiewicz in an analysis of Marx's value and price calculus, published within a few years of the appearance of the Russian's work, in the Tübingen *Archiv für Sozialwissenschaft und Sozialpolitik*.[6] Bortkiewicz's appreciation is worth quoting: 'Considering that the author [that is, Dmitriev] resorts to algebraic and geometric tools of exposition and proof, it is hardly

surprising that his work (as it would seem, his first work!) has elicited little attention (I mean, of course, from the Russian side) although it betrays an extraordinary theoretical talent and brings in something really new [wirklich Neues bringt]'.[7]

Dmitriev's restated argument reveals him as an adherent of the labour theory of value, but one with a powerful mathematical bent. Augustin Cournot presides over his work along with David Ricardo. His argument rests on the notion of 'real' value identified as cost of production: for a Ricardian, both are 'nearly the same thing',[8] proportionate to quantities of labour which have been spent on commodities throughout all stages. On this basis, a market is portrayed as a system of simultaneous equations where commodities and productive activities, which yield them, appear in the conventional mathematical garb of variables and functions: in compact notation $x_i = \Sigma a_{ij} x_j + t_i$[9] where x stands for full costs, in terms of labour, of the i-th and j-th commodities, a_{ij} for the per-unit use-up of the latter in the production of the former and t for the 'current' labour spent on fabrication of the i-th product.

In to-day's language we would see that we have been offered a linear input-output system, with fixed technological coefficients, reduced—as is the elementary Leontief model—to labour as the one and only primary factor: labour is, in Dmitriev, the only social cost of everything that is produced in the economy. It is thus the common denominator commodity. It drops out in price *relations* which are in the focus of Dmitriev's inquiry and appear established by prevailing technologies and supply and demand.[10] In determining full costs—Nemchinov points out—Dmitriev's 'equations simultaneously perform their [own] mutual coordination (iteration) under the conditions of a balanced social production and consumption, and this is of particular importance'.[11] We shall not try to answer whether Nemchinov is right in claiming on this count an advance for Dmitriev over Walras—a question which may be of interest for a historian of economic thought.

Now, what is the relevance of all this for the Soviet economists' present-day controversies? Certain elements of significance from this point of view may emerge if we try to relate Dmitriev's and Marx's constructions—a terrain on which Bortkiewicz is an invaluable guide.[12]

To begin with a difference of great moment, there is in Dmitriev no dichotomy of the calculus into value and its price form. The dialectics of the calculus—so fundamental and so tortuous in Marx—disappear in Dmitriev: price rather than abstract value is Dmitriev's real concern. Nor does Dmitriev follow Marx in splitting up capital used up

in production into its 'constant' and 'variable' constituents. True, in Marx too, the distinction turns out to be of no direct consequence for pricing in perfectly competitive markets. In shaping his *Produktionspreis* market forces grind out a single rate of profit and each capitalist charges it on the whole of his capital (Dmitriev *starts* from a premiss of a single rate of profit). But the break-up of capital into the two components is decisive for Marx's social diagnosis as well as economic analysis of forces and of processes. Once it vanishes from the reasoning, overboard goes the tenet that only the variable part of capital—the part advanced on wages—begets an excess over its own value, a surplus-value, and thus generates profits. Marxists are bound then to have the same grievance against Dmitriev which Marx himself raised against Ricardo. It is that 'he confounds together the laws of the rate of surplus-value and the laws of the rate of profit'[13] (the rate of profit being the ratio of surplus value to the total capital advanced, and the rate of surplus value the ratio of surplus value to the variable part of capital). In a word, Dmitriev's treatment socially sterilises price formation. Those who accept his line of reasoning stand—to say the least—uncommitted with regard to Marx's theory of capitalist exploitation.

The final point of difference between Dmitriev and Marx is, on the face of it, one of arithmetic versus algebra: one of mode rather than essence of argument. It is fashionable nowadays in the USSR to extol Marx's mathematical performance. Engels credited him with a profound knowledge of algebra (on which Pareto tersely commented 'Sur ce point Engels doit etre cru sur parole: les preuves manquent').[14] Dr. Meek[15] makes the correct point that Marx's mathematics differs *functionally* from that of modern economists since it is designed to illustrate an argument rather than to prove it, and does this only on an elementary level. This is true, but it is not the whole of the story. Dmitriev versus Marx is a good example of how a difference in the kind of mathematics employed is related to a fundamentally different way of viewing the economy. The point is made very pertinently by Bortkiewicz. He is most convincing in arguing that Marshall's critique of Ricardo holds *a fortiori* in respect to Marx: Marx was unable to state clearly, or perhaps to see fully and clearly how, in the problems of 'normal' value various elements of an economy govern one another mutually rather than 'successively in a long chain of causation'.[16] In his price and profit construction. Bortkiewicz says,[17] 'Marx stuck [to the idea] that elements involved should be . . . thought of as a causal chain of which each link is determined by its antecedent, with regard to its essence and to its magnitude'. And Bortkiewicz adds as an afterthought, in a footnote: 'the quarrel between production-cost and

marginal-utility theoreticians is chiefly the consequence of the successivist prejudice'.[18] Indeed it is: the problem of 'causal hierarchy' has a far-reaching implication. Precisely because Dmitriev was able to emancipate himself from the 'successivist prejudice' and had turned to a system of simultaneous equations, he gained a more realistic insight into functional inter-sectoral relations of the modern complex economy. Proceeding on this route from the classical theory of value Dmitriev arrived at a general equilibrium (Professor Leontief makes us fruitfully conscious of the idea that despite the many differences, the general theory of inter-dependence is 'generically related' to the classical theory of value)[19] and he landed in marginalism. Dmitriev's remarkable work has a subtitle—not surprisingly passed over in silence in present Soviet references—which defines his purpose as 'an attempt at an organic synthesis of the labour theory of value with marginal utility theory'. *Sapienti sat.*

What has been said here may be of help, we think, in locating with greater precision the respective positions of adversaries in the area of the present Soviet controversy, specifically of those who take inspiration from the rediscovered writer. In more than one respect Dmitriev's system furnishes only the basic intellectual scaffolding. It is imprisoned in its statics—in order to get more reality, changes through time must be brought in. Further, since—as we have noted—it reduces all costs to labour, Soviet economists have to and do refine it by bringing in explicitly other factors in order to derive from it factor rents. But in the model they have an important framework of ideas which contains nearly all the principal ingredients of a modern approach to structural analysis plus the rudiments of the central planner's operational tool.

Dmitriev's insistence on the role of labour as the fundamental element of real cost may provide a possible 'bridge' which official doctrine can cross if such a crossing can be shown to be helpful to planning on empirical grounds. The fact that he was a Russian is likely to help in the efforts of Nemchinov and his colleagues to secure acceptance of what might appear to orthodox ideologists as unpalatable revisionism. In the same way and for the same reason, let us recall, Nemchinov has stressed the Soviet origins of linear programming (Kantorovich's essay of 1939) and the Russian roots of Leontief's ideas.

It is fascinating to watch how—in its present spurt to revitalise and modernize itself, to link up with the contemporary world of ideas—Soviet (or we should say in this context, Russian) economics has to go half a century back.[20] Its need to look back in order to move forward dramatizes both the strength of its roots and its predicament.

ALEC NOVE

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[1] V. K. Dmitriev, *Ekonomicheskiye ocherki* (St. Petersburg, 1904).

[2] V. S. Nemchinov, *Ispolzovaniye matematicheskikh metodov v ekonomicheskoi rabote i primeneniye matematiki v ekonomicheskikh issledovaniyakh* (M., 1959) p. 18.

[3] *Soviet Studies*, vol. 12 no. 1 (July 1960) p. 2.

[4] V. S. Nemchinov, *Voprosy ekonomiki* 1960 no. 12 p. 90.

[5] V. Novozhilov, *Voprosy ekonomiki* 1961 no. 2 p. 89.

[6] Vol. 25 (1907) pp. 10 ff. The title of the paper is *Wertrechnung und Preisrechnung in Marxschen System*. This is the second article of the series.

[7] *Ibid.* p. 18n.

[8] Cf. David Ricardo, Notes on Malthus' Principles of Political Economy in vol. 2 of *Works and Correspondence*, ed. Piero Sraffa.

[9] Dmitriev, *op. cit.* pp. 7–9, as quoted in Nemchinov, *Voprosy ekonomiki*, *loc. cit.* p. 90.

[10] It will be easily noticed that in the Dmitriev system of equations

$$x_i = a_{i1}x_1 + a_{i2}x_2 + \ldots\ldots + a_{in}x_n + t_i \quad (i = 1, 2 \ldots n)$$

'commodity' labour co-determines other commodities in the same way as they co-determine 'commodity' labour itself. The *n* commodities of the system go into 'production' of the 'commodity' labour by making up the wage-good basket (some of the goods taking, of course, in this equation zero value).

In relative price $p_i : p_j$ the factor labour appears in both the numerator and denominator and is eliminated.

[11] Novozhilov, *op. cit.* p. 90n.

[12] L. V. Bortkiewicz, *op. cit.* especially pp. 32 ff.

[13] *Capital*, vol. 1 (Engl. 1938 edition) p. 533.

[14] Vilfredo Pareto, *Les Systemes Socialistes* (2nd ed., 1926) vol. 2 p. 349.

[15] Ronald L. Meek, *Studies in Labour Theory of Value* (London, 1956) p. 197.

[16] Reference to Marshall's *Principles of Economics*, vol. 1 (London, 1898) p. 565.

[17] L. V. Bortkiewicz, *op. cit.* p. 38.

[18] *Ibid.* p. 38n.

[19] Wassily Leontief, *Input-Output Analysis and the General Equilibrium Theory* in *The Structural Interdependence of the Economy*, ed. Tibor Barna (New York—Milano, 1956) p. 42. See also *ibid.* Professor Barna's interesting remarks in his Introduction, pp. 22 ff.

[20] One may read a sign of continuity in the fact that Dmitriev worked at the St. Petersburg Polytechnic, and that Novozhilov has worked at the (Leningrad) successor to this famous school for many years.

Addendum. When this article was at the proof stage a micro-film of Dmitriev's book arrived in this country, thanks to the courtesy of the Saltykov-Shchedrin State Library. I propose to return to this remarkable work later, but wish to quote, in the meantime, a passage of special relevance for our present theme: 'Thus', says Dmitriev 'we reached the conclusion that to whichever of Ricardo's three categories a product belongs its price cannot be determined independently of demand or consumption respectively. That made us turn to the "demand curve" (hardly touched upon in Ricardo's work). We borrowed elements for this analysis from the theoreticians of marginal utility who provided a fully scientific solution of the problem of dependence of product-price on the magnitude of quantity offered (marketed). (In this we tried to correct the historical perspective in the development of this doctrine by showing how little new had been contributed to it by the Austrian school. . . .)'

PROFESSOR KATSENELENBAUM AND THE OPTIMUM METHOD OF FINANCING SOVIET INDUSTRIALIZATION: A NOTE

In the middle twenties, and especially after the XIV Congress of the CPSU, there was practical unanimity among Soviet economists concerning the desirability of industrialization. However, when it came to concrete policy proposals, the solid front of industrialization revealed significant differences of opinion concerning the best way in which industrialization should proceed. This Note examines the proposal of Professor Katsenelenbaum for coping with the chief problem of Soviet industrialization—capital scarcity.[1] His proposal bears, in part, a close resemblance to the basic premise of Preobrazhenski's argument concerning the source of the 'investable surplus' required to finance industrial investment but it differs sharply from Preobrazhenski's proposal concerning the method by which this surplus should be obtained.[2]

Katsenelenbaum distinguished three aspects of the industrialization problem: the question of the structural aspects of industrialization ('in what branches of the economy is industrialization required'), the question of the size of the 'investable surplus' ('the limits to which industrialization can be carried, i.e., what amount of resources can be directed to this end in any given period'), and the question of the best method by which the 'investable surplus' should be drawn into industrialization. It was the last question with which he was chiefly concerned:

> . . . there is a third problem . . . which has remained . . . to some extent in the dark, and on which I plan to dwell in this work . . . the problem of the methods by which the surplus of national income should be drawn into industrialization . . . We must raise the question of the means . . . of creating the fund required to increase the stock of fixed capital.[3]

The first step in formulating the optimum method of financing the industrialization programme called for identifying the potential sources of 'investable surplus', a question which Katsenelenbaum approached by appealing to capitalist precedent: past industrializations were accomplished 'by continuously drawing into industry capital from the outside'. This 'outside' source, or 'industry's Hinterland' as he called it, had to be either foreign capital or the non-industrial sectors of the economy. Katsenelenbaum agreed with other

Soviet economists that little reliance could be placed on foreign capital—a realistic attitude from the viewpoint of the Soviet Union in the 1920s. Thus the source of the 'investable surplus' had to be the domestic non-industrial sector, or—for all practical purposes—agriculture.[4]

The identification of agriculture as the source of the resources required for industrialization marked the point of agreement between Katsenelenbaum and Preobrazhenski. However, this is as far as the agreement went. Preobrazhenski's recommendation amounted to a proposal to accomplish the necessary shift of resources from agriculture into industry by isolation from the foreign market and monopolistic exploitation of the peasants. Katsenelenbaum not only rejected Preobrazhenski's proposal for a Soviet counterpart of 'primitive accumulation', but also denied its relevance for capitalist industrializations, on the ground that 'primitive accumulation' and industrialization did not coincide in time:

> . . . one must completely reject the notion that industry in the various countries of modern Europe and in the United States developed by means of the methods of so-called 'primitive accumulation' . . . The methods of 'primitive accumulation' refer essentially to the fifteenth and sixteenth centuries . . . But the industrializations of modern industrial nations occurred, as a matter of fact, later than that. A number of countries, in particular . . . the United States, Germany, Russia, . . . approached the problem of industrialization by completely different methods.[5]

Having identified the source of the surplus required for industrialization, Katsenelenbaum proceeded to examine three methods by which the necessary funds could be obtained: (1) reinvestment of retained earnings of industry, (2) fiscal operations of the state, and (3) voluntary savings channelled into industrial investment via state credit institutions. The criterion of choice between these alternatives was to be, in Katsenelenbaum's opinion, the relationship between the size of the investable surplus and the method used to obtain it:

> We are mostly interested in the question of the method of acquiring the [surplus of] net national income and not in the question of its size. However, we cannot ignore the fact that the volume of accumulated capital . . . and the volume of resources which can be secured for industrialization are, in turn, closely related to the method by which we approach this matter . . . both the level of national income . . . and the magnitude of that part of net income which can be devoted to industrialization depend on which method is used.[6]

For the purpose of examining the impact of the three methods on national income and the investable surplus, Katsenelenbaum lumped together internal financing and budgetary operations, on the ground that (indirect) taxation (the budgetary method) and monopolistic

pricing of industrial goods (the internal-financing method) would both have the same effect: 'withdrawal of a part of personal incomes via increased prices'. But to the extent that monopolistic pricing and indirect taxation led to higher prices, the two methods would 'strike at the basic nerve of our economy, the stimulation of labour productivity'. In other words, by causing higher prices of industrial goods, the two methods would have a disincentive effect on ouptut.

Very likely, Katsenelenbaum's thinking was prompted by a problem that troubled many Soviet economists in the twenties: smooth functioning of the economy was threatened by the likelihood of a dangerous reaction of the peasantry to an unfavourable change in the terms of trade between agriculture and industry. By withdrawing into the protective shell of their self-sufficiency, subsistence farmers would render largely impotent any attempt to capture their investable surplus via higher prices of industrial goods.[7] The result would be a decline of the 'marketed share' of agricultural output (increased consumption and direct investment by peasants of their own product) followed by a decline of agricultural output, as the flow of equipment, fertilizer, etc., into the village diminished or ceased. Katsenelenbaum considered this point to be self-evident:

> . . . there is no need to prove that the method of obtaining [a part of] the net national income by uncompensated requisitioning weakens incentives to work and at the same time the accumulation of income and the chances of industrialization.[8]

Thus the method to be emphasized—not necessarily to the exclusion of the other two—was the method of stimulating voluntary savings in the non-industrial sector and channelling them into investment projects via state credit institutions:

> Accumulation by means of the budget and by means of internal industrial accumulation, i.e., via high commodity prices . . . undermines incentives to work, and we must therefore gradually give up this system. With these methods is contrasted the method of accumulation by means of credit, a method by which industrialization took place in the past, and which amounts, under our circumstances, to low prices of industrial goods, and [high] incentives to work.[9]

In further support of his thesis, Katsenelenbaum argued that the 'credit method' had played a dominant role in past industrializations of advanced countries, as well as in Russian development before the revolution. Among various past forms of financing capital formation in industry (stock and bond issues, currency issues, and bank credit), he emphasized especially agricultural mortgage credit. In this connection he pointed out that 'it was shown long ago, by Rodbertus, that [agricultural] mortgage credit did not promote the channelling of capital

into agriculture',[10] and that 'the 3 billion [thousand million] rubles obtained from the former mortgage banks in Russia by mortgaging land, were not used to improve land but were directed to other purposes.'

Concretely, Katsenelenbaum proposed that the method of financing the investment programme should be gradually shifted, in the course of the first five-year plan, away from taxation and reinvestment of monopolistic profits, so that of the 18 billion rubles of new investment which the plan called for, no less than 9 billion should be financed by the credit method.

Clearly, this called for demonstrating that voluntary savings of this magnitude would be forthcoming and for proposing concrete measures required to bring forth their flow. First of all, a commitment on the part of the govenment favouring voluntary savings was required. On this score, Katsenelenbaum noted 'certain vacillations regarding the question whether accumulation of [voluntary] savings was proper in the Soviet system', based on the fact that 'Marx did not nurture any special sympathies for the proposition that accumulation of capital was the first duty of the citizen'. But such vacillations, asserted Katsenelenbaum, were out of place, since the purpose of the savings was expansion of the socialist sector of the economy.

A government statement of policy favouring voluntary savings was a necessary first step in implementing the proposal, but it was not sufficient. What guarantee was there that the resources released by the state in giving up taxation and monopolistic pricing would return to the state in the form of voluntary savings? If after-tax real income of the peasants increased, would not consumption rise beyond its previous level? Katsenelenbaum was prepared to admit that the initial impact of his policy would be some rise in consumption, but he thought that it could be cushioned by implementing the policy gradually and that it would be offset by the rise in output and productivity brought about by the decline of industrial prices:

> It is, of course, possible that some increase in consumption . . . would occur at first; but this would be compensated by the rise of labour productivity and the growth of national accumulation resulting from the proper stimulation.[11]

As for concrete measures to be adopted in order to entice voluntary savings, Katsenelenbaum pointed to the rate of interest. This followed logically from his proposal, and he was prepared to advocate raising interest rates on state loans and savings deposits to the level required to call forth the necessary volume of savings:

> It is often thought that in Soviet conditions interest is of no essential significance, and under these circumstances it is believed that the most correct policy is to lower interest rates. But this is a very controversial policy. Of course, it may have been undesirable that we had to pay a rate of interest of 40 per cent. on state loans . . . But the point is that when we lowered the rate on loans to 12 or 14 per cent., very little capital could be obtained in this way, and we would have to cover the budget by means of excise taxes.[12]

This presents some indication of the rates that Katsenelenbaum thought would be required to stimulate the desired volume of saving. Clearly, his conviction that the credit method of financing industrial development was superior to the others must have been very strong to justify his willingness to pay interest at such high rates.

Katsenelenbaum's thesis may be described as an attempt to escape the Preobrazhenski dilemma: the need for a vast industrialization programme faced by the inadequacy (or undesirability) of the methods of 'primitive accumulation' as an instrument to achieve this end. In place of the 'totalitarian' method of 'primitive accumulation', Katsenelenbaum proposed the much milder policy of inducing peasants to part with their surplus by stimulating their incentive to save. But his plea for voluntary savings to replace taxes and monopolistic pricing as the source of the necessary investment funds could hardly be very persuasive unless it was accompanied by a policy of increased differentiation of the peasantry and non-intervention with more efficient producers, i.e., by ending egalitarian trends in income distribution and freeing the kulaks to produce as efficiently as possible, e.g., by permitting them to hire agricultural labour and by changing the terms of trade in their favour by an appropriate price policy. Katsenelenbaum made no such proposal. In this connection it is noted again that he placed very heavy reliance on what were, in his interpretation, the salient features of past industrialization in advanced countries. This leads to a major criticism of his approach. Theorizing about economic problems can undoubtedly profit from analysis of historical events, but the application of results obtained in this manner to current problems runs the risk that the 'here and now' is so different as to make the results obtained 'there and then' of little value. This was the case with Katsenelenbaum's thesis. His proposal for dealing with the most important problem of the Soviet economy was quite incongruous with the institutional set-up of that economy in 1928. Since he did not openly propose any drastic changes in this institutional arrangement, it must be concluded that his analysis was not applicable to the problem he tried to solve, and that his proposals would have failed to accomplish what he argued they would.

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[1] Z. S. Katsenelenbaum, *Industrializatsiya khozyaistva i zadachi kredita v SSSR* (*Industrialization of the Economy and the Tasks of Credit in the USSR*) (M.-L., 1928).

[2] See e.g., Alexander Erlich, 'Preobrazhenski and the Economics of Soviet Industrialization', *Quarterly Journal of Economics*, 1950 pp. 57-88.

[3] Katsenelenbaum *op. cit.* p. 12.

[4] The 'refusal of foreign capital to flow into an alien system' was not a serious obstacle. In Katsenelenbaum's opinion, foreign capital had played only a minor role in past industrializations, and the brunt of the financing of industrialization had been shouldered domestically ('the major role in the overall inflow of capital [into Russia] from the "outside" during the last decades before the war, was not played by foreign capital but by the flow of domestic accumulation into industry').

[5] Katsenelenbaum *op. cit.* pp. 14-15.

[6] Katsenelenbaum *op. cit.* p. 51.

[7] Cf., e.g., the views of Shanin and Preobrazhenski as described by Alexander Erlich, *op. cit.*, and in his dissertation, *The Soviet Industrialization Controversy* (New School for Social Research, 1953).

[8] Katsenelenbaum *op. cit.* p. 80.

[9] Katsenelenbaum *op. cit.* pp. 80-81.

[10] This is apparently based on Rodbertus' assertion that the chief cause of agricultural mortgage indebtedness was not loans to finance agricultural improvements, but that the mortgage debt was incurred, for the most part, in connection with sale or inheritance of landed property. See, Karl Johann Rodbertus-Jagetzow, *Zur Erklarung und Abhulfe der heutigen Creditnoth des Grundbesitzes*, 2nd ed. (Berlin, 1893) pp. 11-15.

[11] Katsenelenbaum *op. cit.* p. 86.

[12] Katsenelenbaum *op. cit.* p. 87.

Alexander Erlich, *The Soviet Industrialization Debate, 1924-1928*. Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1960. xxiii=216 pp., 48s.

In this useful monograph, Professor Erlich examines the views of five leading participants in the Soviet discussions on industrialization, dealing mainly with the years before the decision to collectivize had thrust aside the assumptions of the New Economic Policy. His central figures are of course Preobrazhenski, who insisted on the necessity of a stage of 'primitive socialist accumulation' involving the 'exploitation' or 'alienation' by the state of part of the peasant's product, and Bukharin, the principal advocate of equilibrium between town and country and a slower rate of industrialization. Stalin's policy statements are also summarized briefly by Erlich; until the end of 1927 he appeared to stand close to Bukharin. On Bukharin's right was Shanin, one of the 'Narkomfin professors', who argued on traditional 'least-cost' lines for investment in agriculture, for a few years at least, as the cheapest way of securing economic growth and an ultimate rapid expansion of industry (agricultural exports would pay for the initial cheap imports of machinery). Somewhere between Bukharin and Preobrazhenski comes Bazarov, previously rather neglected in Western writings, who attempted what Professor Erlich describes as a 'synthesis'. Bazarov agreed that industry must be developed, but argued that this was possible only if the limited resources available for investment were husbanded carefully and used efficiently: existing plants should sometimes be recapitalized instead of building new ones, and instead of a 'superficial industrial expansion' in all directions at once, new investment should be concentrated in industries which command a ready mass market and therefore had low costs—these mass produced goods could be exported to pay for industrial imports which were not produced at home.

Professor Erlich's study is divided into three parts. In the first part, he explains the views of his five 'representatives'. He does not always make as thorough a study of their writings as is perhaps desirable. The exciting discussions in the Communist Academy in January 1926 on a chapter of Preobrazhenski's *Novaya ekonomika* would have been highly relevant to Erlich's account of Preobrazhenski; so would the discussion there later in the same year on the 1926-7 control figures, in which Preobrazhenski participated. Sokolnikov, whom Professor

Erlich couples with Shanin, deserves to be represented by more than his short speech to the XIV Party Congress. Another defect in the account given of the views of these men is that they are not very much related to the context of economic situation and government policy. Bukharin's and Stalin's attempts to harmonize increasing industrial investment with the 'worker-peasant alliance' in 1926 and 1927 need to be seen as part of an intensive government campaign for a 'regime of economy': the XV Party Congress resolution was not—as Erlich depicts it—the central document in a 'compromise solution'; it was a closing incident in this joint campaign, the failure or incomplete success of which preceded Stalin's decision to be tough with the peasants.

But on the whole Dr. Erlich has presented his chosen economists quite carefully. A more serious problem is his selection. He is right to restrict himself to a few major figures. But should he have excluded Kondratev and the other 'neo-narodniks' whose great debate with Strumilin on purposive planning played an important part in the formation of Soviet thought? Should he not have found a corner for Z. S. Katsenelenbaum's 'private savings' doctrine, for Krasin's advocacy of large-scale foreign credits and for Dzerzhinski and the regime of economy?

The second part of the book is a thought-provoking critique of the debate in the light of Western economic theory. Erlich begins by contrasting the 'capacity-increasing' and 'expenditure-generating' effects of investment. On the one hand, he argues, the period of under-replacement of capital since 1916 had made at least a minimum level of investment urgent and rewarding; on the other hand, investment was likely to be costly in the short run and, in the circumstances of NEP, to generate inflation and drive the peasants into greater self-afficiency. Erlich contests Shanin's view that investment in agriculture could provide a way out of the dilemma. Some low-capital methods are wasteful because of the 'prodigiously large amounts of labour' they use up, and in any case there are good reasons, ignored by Shanin, for using capital intensively in some sectors of the economy while overall capital outlays remain relatively low—in fact capital may sometimes have to be invested in large lumps. Above all, he argues, Shanin seemed unaware that 'while today's steel would compete with today's grain for investable resources, its expansion would help to produce more grain tomorrow'. Professor Erlich suggests that there is a strong case, on a long-range view, for believing that there are great advantages in a spurt of intensive investment—thus it is advantageous to borrow technology in packages, and growth would be self-reinforcing, especially when the new plants begin to come into operation. Industrial

investment was all the more possible and necessary in Russia in the mid-1920s because a substantial modern industry already existed, Erlich argues. He is on the whole sympathetic to Bazarov's suggestions for saving resources by concentrating investment on the most rewarding sectors of industry.

Professor Erlich's conclusions in this part of his book are necessarily tentative, if only because his discussion is conducted largely on the plane of economic principles and does not examine in detail the specific Russian situation of the mid-1920s. But his attempt to bring Western economic analysis to bear on Soviet thought and policy is novel and worthwhile. It is weakened by his failure to convey sufficiently to the reader the political context in which the economists he is discussing were themselves thinking. As a result, their framework of thought is not made sufficiently explicit. The difficult problem of handling Russian political economy by Western economic criteria is not faced squarely.

The final chapter deals briefly with the policy decisions in fact taken by the Soviet government in 1928–9, and the reasons for them: it thus enters upon a new subject and a new field of discourse. It has some interesting ideas, but Professor Erlich's incursions into politics and sociology here and elsewhere are not successful, and weaken the logical structure of the book by undermining his attempt to examine Soviet ideas by consistent economic criteria.

Something has gone wrong with the index. All references to pp. 202–9 (which include all the footnotes, already difficult to use because in the American fashion they are placed at the back of the book) must be moved back one page; e.g. p. 209 should be p. 208.

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John N. Hazard, *Settling Disputes in Soviet Society: The Formative Years of Legal Institutions*. New York: Columbia University Press, 1960. (London: Oxford University Press.) 534 pp. 76s.

THIS book marks important progress, both in the work of its author, who now has clearly adopted the historical approach to Law, and in the study of Soviet Law in general, since we have been presented with the first comprehensive fully documented study of a definite stage of Soviet legal development, be it even only in one of its aspects, namely the growth of court organization and of the law of procedure. A price had to be paid for comprehensiveness within the chosen field: not only the development of legal philosophies (to which Professor Hazard paid perhaps excessive attention in his earlier works) but also that of the positive law administered by the courts has been omitted. Surely it is difficult to get a correct impression of a court system unless the content of the law administered by it is made clear. Yet, on the other hand, the availability of a reliable work on court procedure helps us to understand the meaning of the articles of the Codes in actual court practice. (The usefulness of the book in this respect might have been increased if the author had collected data about the way in which, for example, the appeal system worked, about the practices of reprieve-intentional, and enforced one 'to unburden the prisons'.)[1] Yet even the chosen concentration on the disputes from which Soviet court organization and law of procedure arose, gives plenty of insights into the general setting of the early periods of Soviet history. In my opinion, this book is not only essential for the student of Soviet law but most important also for every student of the development of Soviet society during those periods.

If the chosen angle of treatment precludes a comprehensive approach to Soviet law during the period, it also puts an end to the misconception of Soviet legal development which denied the existence of a Soviet legal system during the preNEP period. For, of course, some court organization and court procedure existed all the time. As regards the existing *lacunae* in early codification Professor Hazard (p. 19) points out that they were due to the revolutionary leaders' intention to collect experience in the practical development of precedent prior to re-codification of the law. From the party's own point of view, the *lacunae* were not so enormous as Professor Hazard believes;[2] in consequence of the narrow delimitation of his subject he has also failed to devote attention to the efforts at comprehensive codification which went on all the time, in spite of the difficulties of the civil war period.[3] Yet the reason mentioned by him for the delay of most of the actual codification up to 1922 was certainly an important one; its recognition by the leading American student of Soviet law forms a decisive break

with the conception (maintained by leftist Soviet theorists of the late twenties as well as, much later, by Western deniers of the possibility of a socialist legal system) that Soviet law was essentially bound to the NEP compromise. Another merit of Hazard's approach is his recognition of the fact that certain aspects of Soviet procedure which appear strange to the Anglo-Saxon student, such as the construction of the trial as a verification of the work of the preliminary examiner rather than as a proceeding *de novo* in which no one knows in advance what evidence will be produced (p. 29), are, in fact, common to all the continental legal systems, the implication being that their appreciation should in no way be associated with that of the economic foundations of the society served by the law.

This book, like any other one, has its limitations. Some are self-imposed by the author's concentration upon the arguments proceeding amongst the Soviet lawyers. If the author had used the available information on the local initiatives, pre- as well as post-revolutionary, to create a new legal system,[4] he would not have described the efforts at simplification of the law as an initiative of Bolshevik lawyers influenced by what he (on p. 490) uncharitably describes as 'the mob', an initiative of the utopian character of which they were eventually convinced by trial and error (this concept forms the main axis of his book): in fact, a spontaneous movement from below made its revolutionary impact upon the legal order, eventually to be absorbed by the new system (and not all of these initiatives from below proved to be utopian). If the author had concentrated more on the actual power struggles proceeding in the country than on generalizations about 'power' he would have seen that the struggle about the centralization or 'dual subordination' of the procuracy (pp. 220 ff.) was not just a dispute between two schools of lawyers but part of the struggle which Lenin waged for the subordination to central decisions of the local party organizations, not all of which accepted the hard necessities of NEP and some of which would surely have used control of the local courts as a means to sabotage NEP by depriving entrepreneurs of even quite legal opportunities for exercising their rights. Nor could he then, on the other hand, have made statements such as that the codifiers of Soviet Law by stabilizing procedure hoped to curry favour 'among their own people and western workmen beyond their boundaries':[5] in fact, working-class opinion inside and—in so far as it was pro-communist at all—outside the USSR had to be reconciled with the NEP compromise which contradicted 'natural proletarian instincts' precisely in so far as it allowed the capitalist entrepreneur a certain scope of legitimate activities. The development of Soviet law has been, and is, conditioned not only by the inherent needs of the regime but, with

quite inconsiderable exceptions, by needs not of propaganda but of the proper functioning of the economic basis. Soviet legality is not a concession made by power-hungry officials to external needs but serves, like any other legal system, the safeguarding of the economic basis of the state: it changes, in a state involved in quick economic evolution, with the changing character of its economic basis.

Because the codifiers of Soviet law accepted NEP as a temporary necessity, they elaborated the complicated legal system required by a market economy, trying to preserve as much as possible of the originally intended simplicity, which was for them an issue of closeness to the common man. Because they hoped that the end of NEP heralded the transition to a free association of the working people and that the legal forms erected by them might protect the NEP man against the needs of the 'second revolution', they tried to bring down, in the late twenties, the forms of stable law. But this was not the consequence of a recurrent obsession of theirs with informality (or, as the lawyer Hazard calls it, 'primitivity'): at the very same time they helped to erect the complicated system of State Arbitration for the management of the planned economy, i.e. of a field where accessibility of the law to the common man's understanding did not matter. They even hoped that the Economic Law serving the management of the new economy would embody whatever stable rules were required in the new society, leaving the settlement of disputes amongst individual citizens and the punishment of the wrongdoer to less formal procedures which could appreciate the moral merits of the individual case.

Professor Hazard's concentration on the transition from 'primitivity' to increasing formality and specialization leads, to some extent, to a partial and one-sided treatment of the understanding of his period but breaks down when, in the concluding pages of his book, he tries to extrapolate it so as to explain the events of the later Stalin and of the post-Stalin period in terms of a struggle—interrupted in 1953 by a temporary compromise between the party politicians, aiming at unrestricted use of power, and the men of law striving for legality. Except in those particular fields where it might hinder his settling of accounts with his opponents, Stalin was no opponent of strict legality—on the contrary, as opposed to the more enthusiastic revolutionaries, he aimed at a quick stabilization of the new society with all its inequalities; his henchman Vyshinski tried to overcome the loose and elastic concepts elaborated by the leaders of the legal profession during the preceding period. Destalinization, on the other hand, involved not only restoration of the security of the law and creation of additional safeguards against violation of the rights of the individual citizen but also resumption of the trend towards a social justice capable of appreciating

the merits of the individual case. It is a near-truism to say that in a society facing such tasks it is the politicians who formulate them and the lawyers who try to bring their solution into an orderly system—and, in so far, are delaying the application of the new approaches. These disputes go on and are bound to continue short of the achievement of a society based on voluntary discipline, but it is clearly mistaken to treat them as a struggle between primitivity and specialization and, *a fortiori*, to interpret them in terms of a struggle of the lawyers safeguarding the rights of the individual against the politicians who, if left to their own devices, would rather today than tomorrow make another go on Stalinist lines. Soviet society—not just its lawyers—has outgrown that stage.

I would not like to end my review on this critical note. No disagreement with a professional lawyer's professional blinkers should obscure the fact that his very concern with technical detail enabled him to do a job which no one else could do, certainly not the present reviewer who, if at all going, for example, into the very minor reforms in criminal procedure discussed in 1924, would immediately ask himself what his publisher and readers would have to say about it. Yet, when presented with Hazard's very detailed report on these arguments and reforms (pp. 380 ff.), one sees, behind the apparently dull matter, the bridge with the past, and one may forget, for a moment, that a third of a century has passed between these arguments and those which I had recently to report to our readers. The years treated in this book were, indeed, the formative years of Soviet Law. Thanks are due to Professor Hazard for the outstanding contribution to our knowledge of what was going on in those days.

RUDOLF SCHLESINGER

[1] Cf. A. A. Gertsenson, *Borba s prestupnostyu v RSFSR*, in *Sovetskoye pravo* vol. III (1929), especially pp. 107–9.

[2] On p. 67 he mentions the marriage, inheritance and labour codes (the land law of 19 February 1918 should have been added), adding that inroads upon each judge's freedom to make his own law occurred only 'in some cases critical for the continued existence of the regime'. In fact, the very type of case critical for the existence of the regime was left to the Revolutionary Tribunals, if not to Cheka's discretion; during the first revolutionary period codification was carried out in those fields where there was an intention to indicate the long-term aims of the regime (sometimes with a utopian flavour, as in the instance of the Labour Code) or to enact over-ripe democratic reforms (as in the case of the marriage code) without paying undue tribute to the hard needs of the day.

[3] Cf. O. I. Chistakov's article on the Organization of the Codification Work in the early years of the Soviet Regime, published in *Sovetskoye gosudarstvo i pravo* 1956 no. 5.

[4] On this subject, apart from Kurski's Selected Speeches, which in other connections are frequently quoted by Hazard, Greengaus's article in *SGP* 1940 no. 3 and the two articles published by V. Pronina and P. Mikhailenko in *Sovetskoye yustitsia* 1957 no. 3 were available even to the present reviewer; American students, with the treasures of the Library of Congress at their disposal, could do a lot better. The decisive work has obviously to be done by Soviet students whose free use of the archives on this subject is hardly any more subject to political restrictions.

[5] p. 337. For another, quite unnecessary, concession to the 'power' concept see note 2 above.

S. G. Berezovskaya, *Prokurorski nadzor za zakonnostyu pravovykh aktov organov upravleniya v SSSR* (Procuracy supervision over the legality of the official acts of administrative agencies in the USSR). Moscow: Gosyurizdat, 1959. 136 pp. 3 r. 80 k.

THIS small volume concentrates on and brings up to date one aspect of the Soviet Procuracy's 'general supervision' function which was treated by the author in one of the first monographs ever published on the subject.[1] Madame Berezovskaya, an employee for many years of the Department of General Supervision of the Procuracy of the USSR, combines in this presentation the official provisions for exercising general supervision over the legality of governmental enactments along with many examples of the actual implementation of such supervision. Her emphasis on the operational experience of procurators in performing this function thus resembles a work written by the late chief of the Department of General Supervision which also stressed how the duties assigned to procurators in this field and the methods employed to carry them out were actually utilized in practice.[2]

Unlike her earlier work which contained considerable historical treatment of the progressive development of the general supervision function of the Procuracy through statute, decree, order and constitutional provisions, this book is almost entirely concerned with current operational methods and legal forms utilized by the Procuracy in the area under discussion. In fact, the book was obviously prepared in order to bring up to date developments in general supervision as a result of the promulgation of the basic law governing the structure and powers of the Procuracy, *viz.*, the Statute on Procuracy Supervision in the USSR of 24 May 1955, inasmuch as the author's previous book had appeared in 1954. This new book also seeks to include the concepts and approaches concerning Soviet legal processes which were presented in the XX and XXI Party Congresses, such as 'enlisting the mass of toilers in the struggle for legality', along with the post-1954 task of exercising Procuracy supervision over the enactments of the sovnarkhozy.

The title of the book indicates the author's focus on the proper subjects for the Procuracy in its exercise of general supervision, i.e. the 'official acts of administrative agencies'. She thereby implicitly excludes from Procuracy jurisdiction any supervision over the enactments of higher governmental organs (except those of individual ministries). In her first book (p. 53) she had asserted the power (*pravomochiye*) of the Procuracy to challenge the legality of decrees of the councils of ministers of Union and Autonomous republics, a position for which she was severely criticized by two reviewers.[3] In her later work the possibility of such challenges is specifically rejected by her

statement that all administrative agencies fall within the competence of Procuracy supervision 'except the highest executive and administrative organs of state power of the USSR, Union and Autonomous republics' (p. 36), and she considers only supervision over the legality of subordinate legislation.

The author (p. 19) lists the powers available to the Procuracy in its exercise of supervision over the legality of administrative acts: (1) lodging protests against illegal official acts of administrative agencies; (2) bringing suits in court to restore citizens' rights violated by the illegal acts and actions of officials; (3) submitting proposals to agencies and 'public organizations' concerning eliminating violations of the laws and the causes of such violations; (4) making accountable (through proceedings instituted in disciplinary action) officials guilty of violating the laws. The greater part of the book consists of a presentation of the operational practice of the Procuracy, based on various enactments, in utilizing these powers to supervise legality in the various levels of governmental administration.

The author maintains that 'any illegal official act of any ministry or department can and should be protested by way of Procuracy supervision' (p. 35). She notes that 'departments' (*vedomstva*) embrace the commissions and committees attached to the Council of Ministers of the USSR, including the Committee of State Security (KGB). However, although the Procuracy may have statutory authorization to exercise supervision over the legality of the enactments of the KGB, no examples have ever been cited of actual protests lodged against its official acts.

The book's principal value, in the opinion of this reviewer, lies in the many examples cited of the contrast between statutory exposition of functions and procedures and the actual implementation in practice of supervision over the legality of subordinate legislation, a reflection of the author's invaluable experience in the daily operations of the Procuracy in this field. For example, although procurators are supposed to attend meetings of the executive committees of local soviets in which their protests lodged against some enactment of the executive committee are considered, 'in practice' procurators often fail to appear (p. 97). Likewise, procurators frequently fail to participate in court sessions on civil suits, involving the legality of some administrative act, which they themselves have initiated (p. 126). These and other instances present useful information concerning shortcomings in the implementation of supervision over the legality of official acts which no amount of reading of statutory procedures will provide.

Also of interest are the areas in which some aspect of Procuracy supervision over administrative enactments is unregulated by statute.

For example, the law does not prescribe the actions to be taken by procurators when their protests are rejected by the agency with which they have been lodged. In this instance the Procuracy has developed a procedure of 'transfer of rejected protests' via higher procurators to higher agencies (pp. 100–101). Furthermore, the author notes that the failure of the 1955 Statute to list edicts of the presidia of the various Supreme Soviets among the legislation and decrees to which subordinate legislation must conform represents a 'gap' in that law (p. 67). Likewise, also unregulated by law are the requisite actions of procurators following adoption by an agency with which a protest was lodged of a decision of compliance with the protest (p. 102).

Therefore, her work is more in the nature of exploring problem areas, i.e. indicating problems encountered in the actual process of exercising supervision over administrative acts, rather than mere examples of the prescribed methods of lodging protests and submitting proposals. It is clear from her discussion that many of these problems have not yet been resolved by legislation, although to a certain extent 'practice' has determined the solutions to be applied.

Two subjects treated by the author which have received scant attention in Soviet legal literature are: (1) those administrative acts which may be challenged by citizens through judicial procedure and which are, therefore, not subject *directly* to protest by the Procuracy (p. 14 and ch. V, *passim*); and (2) the power of the Procuracy to initiate civil suits in exercising supervision over the legality of administrative acts (ch. V).

Finally, it should be noted that such a work is valuable in view of the peculiarities of the closed Soviet society in which access to administrative enactments and public records is either restricted or impossible, both for Soviet citizens and foreigners. Thus, we must depend on such publications as this book to learn of the existence of a 'methods letter' of 1956 of the Department of General Supervision entitled 'On supervision over the legality of official acts issued by administrative agencies and public organizations' (p. 40, n. 1). Such documents do not appear in the official organ of the Procuracy (*Sotsialisticheskaya zakonnost*), and the *Sbornik prikazov Prokuratury SSSR* has not appeared since 1939.

San Jose State College, California GLENN G. MORGAN

[1] S. G. Berezovskaya, *Prokurorski nadzor v sovetskom gosudarstvennom upravlenii (obshchi nadzor)* (M.: Gosyurizdat, 1954).

[2] P. D. Albitski, *Voprosy obshchevo nadzora v praktike Sovetskoi prokuratury* (M.: Gosyurizdat, 1956).

[3] I. N. Pakhomov, *Sovetskoye gosudarstvo i pravo* 1956 no. 8 p. 136; L. A. Nikolayeva, *Vestnik Leningradskovo universiteta* 1956 no. 5 part I p. 125.

Albert Parry, *Russia's Rockets and Missiles* (with introduction by Willy Ley). London: Macmillan & Co., 1960. 382 pp. 25s.

HERE is a book of over 350 pages on a subject which should be of palpitating interest to the military strategist. But now that I have read it, I must confess to a feeling of basic disappointment. The introduction to the book is by Willy Ley, a man whose writings on rockets and space travel (e.g. his book published by Chapman and Hall in 1948 and his subsequent articles in the US Press) are to be thoroughly recommended to anyone who wishes for sound basic technical education in a field of knowledge which may well dominate much of our thinking and popular journalism in the next forty or fifty years.

In his introduction Dr. Ley says he is glad that the American public (*Russia's Rockets and Missiles* was first published in the USA) have been given an opportunity to read about Russian space exploits from 'first-hand sources' and he sums up thus: 'here is a book that brings information which has not been available before'.

I certainly was surprised to read some of the information which Dr. Albert Parry offers the reader in his *Russia's Rockets and Missiles*. He says for instance that about half the aircraft used in the Soviet Air Force in the Second World War were American or British Lend Lease planes. This I am sorry to say is a ghastly inexactitude. No one would deny, of course, that such planes as British Hurricanes and United States P.39 aircraft made a useful addition to the Soviet Air Force fighters of that period, as did the US B.25 Mitchell and other US medium bombers to Soviet Air Force attack potential. But Western air Lend Lease to the Soviet Union was measured in hundreds of aircraft a month and Soviet aircraft production in thousands of planes a month. In any event, one may well wonder what facts and figures about fighter and bomber planes and United States planes are doing in a book entitled *Russia's Rockets and Missiles*. But this is by no means an isolated hors d'oeuvre, for the reader will also find in this rather diffuse book facts and figures about telephones, juke-boxes and golf courses in the United States.

I am sorry to have to be so critical for there is a lot of valuable information on Soviet rockets and missiles in Dr. Parry's book. It is the only book I know, written by a Western author, which traces the full development of Russian rockets from Tsarist days to the dawn of Soviet space travel. It is the first really comprehensive account to be

published on the subject. In contains much valuable data on the father of Soviet rockets, Konstantin Tsiolkovski, on the Soviet rocket debt to the German V2 and about other rockets in the present generation of Soviet tactical, intermediate and long range missiles and also on many other kindred and allied subjects.

Dr. Ley in the opening sentence of his introduction describes the book as excellent. It is in one respect. The bibliography of books given at the end of the text is a valuable reading list for those who wish to study Soviet rockets and space travel, in particular, the larger international aspects of these two topics. But to return to the body of Dr. Parry's book, it is compounded of much material, in my view too much material, which deals with United States as well as Soviet rockets. Comparisons between the USA and the USSR technical progress are, one supposes, inevitable in a book of more than 350 pages called 'Russia's Rockets and Missiles'. The author himself was born in Russia but came to the United States in his youth and obtained his doctorate at the University of Chicago. Perhaps because of this he tends to think more dichotomously than most, i.e. comparisons between Russian and American achievement are always dancing at the end of his pen. But much too great a proportion of the text is devoted to such United States topics as Miss Sam, the US space monkey, the United States observatory at Mount Wilson and the National Academy of Sciences of the United States. Then, as one has already noted, there were the telephones, the juke-boxes and the golf courses.

Dr. Parry, the dust jacket tells, is a consultant and visiting lecturer at the United States Army War College and in the Second World War he served with the United States Office of Strategic Services. But there is nothing in the text of his book to suggest that he is really familiar with the wide range of weapons and equipment he writes about.

In the United States of the postwar period there has been a growing tendency to use civilians on matters of great military moment. The Rand Corporation research efforts are perhaps the best example of this. While no one wishes to decry the valuable contributions which have been made by civilian minds to military problems (one recalls for instance the work of Professors Jones and Blackett in Britain in the Second World War) nevertheless something better than a nodding acquaintance with the weapons and equipment is needed if the man out of uniform is to help the man in uniform. I rather suspect that Dr. Parry has only a nodding acquaintance with rockets and space travel and my suspicions are enhanced by the titles of his previous books, *Tattoo*, *Whistler's Father*, *Garretts and Pretenders* and *Russian Cavalcade*.

Russia's Rockets and Missiles is a valuable compendium cum calvalcade on this subject which is of vital concern to us all. But it is the importance of the subject rather than the book itself which has finally persuaded me to recommend it to all students of Soviet affairs. Comparisons are indeed odious, but I much prefer the recent books of Dr. Garthoff and Dr. Dinerstein on Soviet military affairs, even though they do not cover as much ground on the subject of Russia's rockets and missiles as Dr. Albert Parry's book does.

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May 31, 1961

To the Editors,
Soviet Studies

I would like to point out that Mr. D. P. Costello's 'Voluntarism and Determinism in Bolshevist Doctrine' (*Soviet Studies* vol. XII April 1961 no. 4), which takes a statement of mine as its point of departure, is actually very close to my own thinking. I agree completely with Mr. Costello that the implications of Lenin's tactics were highly voluntaristic. My statement in *Problems of Communism* was meant to refer—though evidently this was not clear—to the deterministic beliefs about the revolutionary process which the Bolsheviks held, however inconsistently, up to Stalin's time.

Very truly yours,

ROBERT V. DANIELS

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